



## PATENT IMPROVEMENTS IN CHRONOMETERS,

WATCHES, AND CLOCKS.—E. J. DENT, 29, Strand, and 18, Cockspur-street, watch and clock maker, by appointment, to the Queen and his Royal Highness, Prince Albert, begs to acquaint the public, that the manufacture of his chronometers, watches, and clocks, is secured by three separate patents, respectively granted in 1826, 1840, 1842. Silver lever watches, jewelled in four holes, 6 gr. each; in gold cases, from £8 to £10 extra. Gold horizontal-watches, with gold dials, from 8 gr. to 12 gr. each.

DENT'S PATENT DIPLOEDOSCOPE, or meridian instrument, is now ready for delivery. Pamphlets containing a description and directions for its use is, each, but to customers gratis.

CLERICAL, MEDICAL, AND GENERAL LIFE ASSURANCE SOCIETY.—ESTABLISHED 1824.

Persons of all ages, and in every station, may assure with this society on very moderate terms.—No extra premium is required for risk, or residence in going to, residing at, or returning from, any part of Europe. Those wishing to visit, or reside in, other parts of the world, may also effect policies at a small increase of premium.

## FOURTH DIVISION OF PROFITS.

A detailed Report (just published) of all the BONUSES declared—a statement of the LABOUR RESERVE FUND—the favourable prospects of those now ASSURING—and the state of the society generally—can be obtained, free of expense, of any of the society's agents, or by addressing a letter to G. H. PINCKARD, Resident Secretary, No. 78, Great Russell-street, Bloomsbury, London.

NATIONAL LOAN FUND LIFE ASSURANCE SOCIETY, 26, CORNHILL, LONDON.

Capital £500,000.—Empowered by Act of Parliament.

This institution embraces important and substantial advantages with respect to Life Assurances and Deferred Annuities. The assured has, on all occasions, the power to borrow, without expense or forfeiture of the policy, two-thirds of the premiums paid (see table); also the option of selecting benefits, and the conversion of his interests to most other conveniences or necessity.

Assurances for terms of years are granted on the lowest possible rates.

## DIVISION OF PROFITS.

The remarkable success and increasing prosperity of the society has enabled the directors, at the last annual investigation, to declare a fourth bonus, varying from 35 to 55 per cent. on the premiums paid on each policy effected on the profit scale.

## EXAMPLES.

Sum.	Prem.	Year.	Bonus added	Bonus in Cash.	Permanent reduction Assured may of Premiums.	Borrow.
1837	£217 15 1		£109 0 11	£16 0 4	£445 0 0	
1838	192 3 0	87 1 4	13 10 2	395 11 2		
1839	165 11 10	74 1 9	11 3 1	346 2 3		
1840	116 7 6	54 0 10	7 18 10	296 13 4		
1841	111 6 8	49 10 0	7 10 4	247 4 5		

The division of profits is annual, and the next will be made in December of the present year.

F. FERGUSON CAMROUX, Secretary.

## NO BREWING UTENSILS REQUIRED.

PATENT CONCENTRATED MALT AND HOP EXTRACT

ENABLES PRIVATE INDIVIDUALS TO MAKE

## FINE HOME-BREWED ALE,

WITHOUT EMPLOYING ANY BREWING UTENSILS.—It has only to be dissolved in hot water and fermented.—Sold, in jars, for medicinal and other purposes, at 1s. 6d. and 1s. 6d.; and in bottles for brewing 9 to 18 gallons and upwards of ale, at 6s. 6d. and 12s. 6d. each, by the

BRITISH NATIONAL MALT EXTRACT COMPANY, 7, NICHOLAS-LANE, LOMBARD-STREET; Petty, Woods and Co., 53, Threadneedle-street; Wix and Sons, 22, Leadenhall-street; Batty and Co., 15, Finsbury-pavement; De Castro and Peach, 65, Piccadilly; Hockin and Co., 38, Duke-street, Manchester-square; and others and grocers generally.

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The Nineteenth Edition, price 2s. 6d.; free by post, 2s. 6d.

**T**HE SILENT FRIEND: a medical work, on the concealed cause of constitutional or acquired debility, loss of muscular energy, and derangement of the generative system, nervous debility, constitutional weakness, excessive indulgence, &c.; with Observations on Marriage, &c. By R. and L. PERRY and Co., surgeons, London. Published by the authors, and sold at their residence; also by Strange, 21, Paternoster-row; Hannay & Co., 63, Oxford-street; Noble, 109, Chancery-lane, & Gordon 146, Leadenhall-street; Purkiss, Compton-street, Soho, London.

Part I. of this work is addressed to those who are prevented from forming a matrimonial alliance, and will be found an available introduction to the means of perfect and secret restoration to manhood.—Part II. treats upon those forms of disease, or their primary or secondary state, arising from infection—showing how numbers neglect to obtain competent medical aid, entail upon themselves years of misery and suffering.

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PERRY'S PURIFYING SPECIFIC PILLS are perfectly free from mercury, capsicums, and other deleterious drugs, and may be taken with safety without interference with or loss of time from business, and may be relied upon in every instance. Sold in boxes, at 2s. 6d., 6d., and 1s. each, by all medicine-vendors—of whom may be had the Silent Friend.—Messrs. R. and L. Perry and Co. may be consulted at No. 19, Berners-street, Oxford-street, London, daily.

ON THE SECRET INFIRMITIES OF YOUTH AND Maturity.

With 25 coloured engravings.

Just published (in a sealed envelope), price 2s. 6d.; or post-paid to any address, 2s. 6d., in Post-office order or stamp.

SELF-PRESERVATION: A Medical Treatise, on Marriage, and on those Secret Infirmitiess and Disorders of Youth and Maturity that are usually acquired at an early period of life, which tend to destroy physical and mental energy, ardour, passion, and all the attributes of manhood. Illustrated with twenty-five coloured engravings, on the anatomy, physiology, and diseases of the urinary and reproductive organs; explaining their various structures, uses, and functions, and showing the injuries that are produced in them, by solitary habits, excesses and infection. With practical observations on the treatment of nervous debility, local and constitutional weakness, syphilis, stricture, and other diseases of the urethra. By SAMUEL LA'MERT, consulting surgeon, 8, Bedford-street, Bedford-square, London. Matriculated Member of the University of Edinburgh, Honorary Member of the London Hospital Medical Society, Licentiate of Apothecaries' Hall, London, &c.

## REVIEWS OF THE WORK.

The author of this singular and talented work is a legally qualified medical man, who has evidently had considerable experience in the treatment of the various disorders, arising from the follies and frailties of early indiscretion. The engravings are an invaluable addition, by demonstrating the consequences of excesses, which must act as a salutary warning to youth and maturity, and by its perusal, many questions may be satisfactorily replied to, that admit of no appeal, even to the most confidential friend.—*Eve.*

Unquestionably this is a most extraordinary and skilful work, and ought to be extensively circulated; for it is quite evident that those are peculiar habits acquired at public schools and private seminaries, which are totally unknown and concealed from the conductors of those establishments, and which cannot be too strongly reprobated and condemned. The engravings that accompany the work are clear and explanatory; and being written by a duly-qualified medical practitioner, will, doubtless, be the means of saving many a youth, as well as those of mature age, from the various evil consequences resulting from early indiscretions.—*Magnet.*

Published by the author; and may be had at Kent and Richards, 51 and 52, Paternoster-row; Hannay, 63, Oxford-street; Starie, 23, Tichborne-street, Quadrant; Gordon, 14, Leadenhall-street, London; Newton, 16, Church-street, Liverpool; and by all booksellers.—At home for consultation daily, from nine till two, and from five till eight; and all letters, immediately replied to, if containing the fee of 1s. for advice, &c. The work may be had direct from the author's residence, and will be forwarded, free of postage, to any address for 2s. 6d. in postage stampa.—8, Bedford-street, Bedford-square.

ON NERVOUS DEBILITY & GENERATIVE DISEASES.

Just published, the Thirtieth Thousand, an improved edition, revised and corrected, 120 pages, price 2s., in a sealed envelope, or forwarded, post-paid, to any address, secure from observation, for 2s. 6d., in postage stampa, illustrated with numerous anatomical coloured engravings. "MANHOOD: the Causes of its Pressure, Decline, with Directions for its Perfect Restoration." A medical essay on those diseases of the generative organs, emanating from solitary and sedentary habits, indolentine, indolence, the effects of climate, and infection, &c., addressed to the sufferer in Youth, Manhood, and Old Age; with practical remarks on marriage—the treatment and cure of nervous and mental debility, impotency, syphilis, and other urino-genital diseases, by which even the most shattered constitution may be restored, and reach the full period of life allotted to man. The whole illustrated with numerous anatomical engravings on steel, in colour, explaining the various functions, secretions, and structures of the reproductive organs in health and disease; with instructions for private correspondence, case, &c.

By J. L. CURTIS and Co., Consulting Surgeons, 7, Fith-street, Soho-square, London.

REVIEWS OF THE WORK.—"Manhood" is a medical work. To the gay and thoughtless we trust this little work will serve as a beacon to warn them of the danger attendant upon the too rash indulgence of their passions, whilst to some it may serve as a monitor in the hour of temptation, and to the afflicted as a sure guide to health.—*Chronicle.* "We feel no hesitation in saying, that there is no member of society by whom the book will not be found useful—whether such person hold the relation of a parent, a preceptor, or a clergyman."—*See, Evening Paper.* "Curtis on Manhood should be in the hands of youth and old age." It is a medical publication, ably written, and develops the treatment of a class of painful maladies which has too long been the prey of the illiterate and the designing.—*United Service Gazette.*

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A REMARKABLE CURE OF DROPSY BY HOLLOWAY'S PILLS.—At Wotton, Bedford, resides Mr. J. Robinson, senior, an opulent farmer, who, some time ago, was in a most dangerous state from dropsy, being nearly double his usual size; he was overtaken by his medical attendant, and was not at the time expected to live three days; yet, from this hopeless state, he was cured by taking Holloway's pills. This gentleman is well known in all the market towns of the county. The wonder is that this fine medicine does in all cases of dropsy, truly surprising. Those who are labouring under this complaint should certainly try this remedy.—*See, all druggists, and at Professor Holloway's establishment, 244, Strand, London.*

## THE COAL AND GAS TRADES—NOVEL PROJECT.

To the Owners and Workers of Coal Mines in Monmouthshire and certain parts of Gloucestershire—To the Directors and Shareholders of Gas-Light Establishments, situated on a Route extending from CARDIFF to LONDON, via GLOUCESTER, &c., To the Canal and Tramroad Proprietors, and the Ironmasters, in the district of country above-mentioned, and to the Public at large, on a new mode of

SUPPLYING LONDON, AND OTHER POPULOUS PLACES, AND ALSO THE GREAT WESTERN AND OTHER RAILWAY COMPANIES, WITH GAS:

With Observations on the various Products to be obtained from Coal—the operations necessary for carrying the affair into effect, to constitute the labours of a "New Joint-Stock Company," to be established at Newport and Cardiff (a branch at each place), that should profitably work up Six Hundred Thousand Tons of Coal per annum.

BY S. B. ROGERS,

Mineral and Metallurgical Chemist, Nantyglo, near Newport, Monmouthshire.

Having been much engaged in the distillation of coal, and converting its products into marketable results, I respectfully entreat your serious attention to some suggestions (the result of 30 years' observations on the subject), relative to procuring a sufficient and regular supply of gas for lighting all the works, towns, and villages on a route extending from Cardiff to London, via Newport, Chepstow, Gloucester, Cheltenham, &c., and also the main and branch roads belonging to the Great Western and other railway companies; and which suggestions may be accomplished (as shall be demonstrated most satisfactorily whenever required) not only with much less trouble, inconvenience, and expense, than by any of the modes now in practice for obtaining gas for illuminating purposes, but with many very great and peculiar advantages to those persons who may have the power, and the inclination, to carry so useful a project into efficient operation.

About 35 years ago, a project similar to the one under view, was submitted to many gentlemen of wealth and talent in this, and the adjoining county of Glamorgan; and also to several of the leaders of the chemical sciences in London; among whom may be named Sir H. Davy, Dr. Wollaston, Sir J. Sebright, and Mr. (now Professor) Bunsen, whose opinions on the project, as communicated to me by the late B. Hall, Esq., of Abercarn, were as flattering as any projector could wish, or desire;—Sir H. Davy, in particular, was much elated on the subject; and he hesitated not to assert, that such an undertaking would, most certainly, be carried into effect the moment its numerous and great advantages were fairly laid open to the public. A variety of circumstances, not necessary now to state, have, however, combined to prevent my making such an announcement, until the present time; but, from the splendid specimens of science, of wealth, of spirit, and of industry, now in full operation throughout the country, I feel persuaded that, although late, it will not be vain to invite public attention to the very important and beneficial concerns under consideration.

It would be a waste of time to repeat the well-supported complaints of those persons who live in the vicinity of gas-manufactories, of the nuisance arising therefrom, any further than to observe, that on the present plan, the evils are increasing in such a manner that, in comparatively very few years, the accumulation of deposits in the main and other pipes, as well as the increased quantity of gas required for lighting towns, streets, works, and premises, not at present supplied with that species of illumination, will cause the immediate production of gas in populous places, particularly London, to be considered the most offensive of all manufacturing establishments. Therefore, in order to remove, or at least to put it in the power of the public to remove, such inconveniences in the most effectual and beneficial manner, I beg to submit, with all due deference to the scientific world, the following project to the serious consideration and patronage of proprietors of coal mines, in Monmouthshire and Glamorgan in particular; and to the directors and shareholders of gas establishments, on the route from Cardiff to London as above stated, generally; and likewise to the enterprising and wealthy population of the empire at large; and I presume to do so in full confidence, not only of its ready practicability, but that it will prove an effective means of giving profitable and constant employment to many hundreds of people who are now, in this immediate neighbourhood, languishing in an almost hopeless state of misery and unproductiveness.

To the procuring of gas from coals, &c., for illumination, or for heat, in London and other large and populous places, there are several serious—indeed, I may say fatal—objections: the most prominent of which may be thus enumerated:—1. The expense, which at a fair computation may be put at 50 per cent. greater than by the plan in contemplation.—2. The unavoidable nuisance arising from the usual modes adopted for its preparation.—3. The inevitable evolution of sulphuretted hydrogen gas from the raw tar and ammoniacal liquors spilt about the premises, even under the most attentive and careful regulations; therefore, to completely remove these, and all other reasonable objections on the subject, I beg to recommend that suitable works be erected at, or near to Newport and Cardiff (a branch of the proposed concern at each of those places), for generating carburetted hydrogen and olefiant gasses, from coal, coal-tar, water, or other proper organic, or inorganic matters (but principally from coal); and for conveying the gasses so procured, through pipes of suitable dimensions, and in various ramifications, to supply by measure, the existing, or any new gas companies, or in some cases even individuals, situated on the line of road above stated, with whatever quantity they may require; which gas companies are to ultimately distribute such gas to where it would be consumed.

Since railways have become the favourite mode of transit, it is certainly desirable that they should be rendered, both by night as well as by day, as safe and convenient as possible; which point can never, I imagine, be effectually accomplished, until they are furnished with gas lamps, at intervals not exceeding 45 yards; which would be about 40 lamps per mile; the gas for supplying these lamps, the projected concern would be able to furnish at the low cost of 30s. per lamp, or 60s. per mile: provided the railway companies will allow of the gas-making being laid on or under their roads. This is a point well entitled to the serious consideration of the directors and shareholders of all railway companies, that may be desirous of protecting their property, and the property and lives of their passengers and customers, from accidents which may arise from want of light, during the dark and dreary seasons of winter; and more especially so since the London mails will almost invariably be conveyed at night.

It is, therefore, proposed.—That the generation, conveyance, and wholesale distribution of the gas, which may be procured from coal, or other substances, at both Newport and Cardiff, and also the manufacturing of the various other raw products, from coal or other materials, do form the pursuit of a new joint-stock company, with transferable shares, on the line of road above stated, with whatever quantity they may require; which company is to ultimately distribute such gas to where it would be consumed.

The undertaking will, necessarily, require a large sum of money to carry it to its most profitable extent: the shares, however, being made transferable, and a division of the profits to take place half-yearly, would afford to the adventurers in the concern equal advantages with regard to facility of investments, or transfers, and dividends very superior to any more funding or security system whatever; for, at a very low estimate of the pecuniary advantages that would be realised, the net returns would certainly be from 12 to 15 per cent. upon the entire capital employed, as the statements herein given will, it is imagined, place beyond all reasonable doubt.

There are in the collieries of Monmouthshire and south-eastern parts of Glamorgan, 800 tons of coal per day, left as a refuse at the works; the whole of which refuse would suit the production of gas, &c., equally with marketable coal; and, were the coal-gutters able to convert this refuse into money (and which they could readily do), the company now proposed to be established at the seaports above-mentioned, it would be able to obtain a profit of 10s. per ton, or 20s. per ton on the total amount of its capital of £100,000,000. sterling; and the numerous shareholders of the company would have the additional consolation of seeing that, by the operations of their concern, thousands of artificers and labourers would be profitably and virtuously occupied, and thereby rescued from the commission of atrocious and fatal crimes.

The present daily consumption of gas in London and its environs, may safely be estimated at 6,000 to 7,000 cubic feet per ton, or an aggregate from 600,000 tons of gas, or 300,000,000 cubic feet; and which, as before stated, may be conveyed through pipes, in any direction and to any extent that may be required, to supply the different gas companies, works, or individuals, and also railway lamps, that may be situated on the route by which the gas should be conveyed from the proposed company's works and premises, at Cardiff and Newport, to London.

The necessary furnaces for carbonising the coal being situated where fuel would be both cheap and abundant—*i.e.*, Newport and Cardiff—or in their immediate neighbourhoods—the body would be enabled to generate gas, and obtain all the other results in question, at much less expense than could possibly be done in London, or other places, at a distance from coal mines; this circumstance would place the company now proposed to be established at an unapproachable distance from all profitable competition, for many years to come; and, consequently, its operations, and its concerns generally, would exhibit a stability and prosperity, almost unknown or unrescued in the annals of the commerce of the world.

The present cost of gas to the London gas establishments may be fairly estimated at £100 per 1,000 cubic ft., or 12s. per 1,000,000 gas, or 1,000,000 cubic feet, and the whole of the London gas companies, may have their full supply of perfectly purified gas, delivered together at 1s. 6d. per 1,000 ft., or 7s. per 1,000,000—thus reducing their

## Law Intelligence.

## HEATH'S IMPROVEMENTS IN MANUFACTURING STEEL.

VICE-CHANCELLOR'S COURT, MARCH 27.

HEATH UNWIN.—This case came upon a motion for an injunction under a notice given in April, 1845. The plaintiff, J. M. Heath, who was the inventor of certain improvements in the manufacture of iron and steel, obtained a patent for the invention in April, 1839. He subsequently brought an action against the defendant for an infringement of his patent. The plaintiff, by his specification, declared the nature of his invention to be, "the use of carburet of manganese in any process whereby iron is converted into cast steel," and described the process thus: "I propose to make an improved quality of cast steel, by introducing into a crucible, bars of common blistered steel, broken as usual into fragments or mixtures of cast and malleable iron and carbonaceous matter, along with from 1 to 2 per cent. of their weight of carburet of manganese, and exposing the crucible to the proper heat for melting the materials, &c.; but I do not claim the use of any such mixture as any part of my invention, but only the use of carburet of manganese in any process for the conversion of iron into cast steel." Carburet of manganese is a known metallic substance, compounded of black oxide of manganese and carbon. It appeared upon the trial at law that the defendant, after the date of the patent, in manufacturing steel, put blistered steel into a crucible, together with certain proportions of black oxide of manganese and carbon; and it appeared, from the evidence of the scientific witnesses upon the trial, and the jury found that these substances would become fused at a certain heat, and would combine and form the carburet of manganese before the blistered steel, which would require a much greater heat to fuse it, could be operated upon by them; but it did not appear that this was known to the defendant. The judgment of the court, as delivered by Mr. Baron Parke, was, that the defendant had not directly infringed the plaintiff's patent, for he had never used the substance called carburet of manganese in the mode described in the specification, and that the defendant had not indirectly infringed the patent, because he did not know that the ingredients he had used would produce the same effect as that used by the plaintiff.

Mr. BETHELL and Mr. CHICHESTER, for the plaintiff, contended that the decision of the court of law was contrary to the opinion of the Lord Chancellor, as expressed in "Muntz v. Foster," delivered in November, 1843, and also in a recent case of "Stevens v. Keating," and that it was evident the opinion of the judges could not be supported when they decided that the defendant had not, either directly or indirectly, infringed the plaintiff's patent.—Mr. WALKER and Mr. ROLFE contended that the judgment of the court of common law was conclusive, and the bill ought now to be dismissed.

The VICE-CHANCELLOR said, the circumstances of this case appeared to him to be quite novel. He did not recollect a similar application having been made, unless the case of "Kay v. Marshall" could be considered as a precedent. He thought that what had been stated as the opinion of the judges when this case was before them, and reported in "13 Meeson and Welsby, 582," was fraught with very dangerous consequences to the rights of persons, because, although he could understand that the animus with which an act was done was of importance to be considered when the question was dependent upon the quality of the act, as regarded a criminal proceeding—for then it might be an answer to say, that the act was done without the intention of the party—he could not see how such a doctrine was to be applied to cases of this sort. A person might commit an act unconsciously, but *prima facie* he was liable for the injury he had done. In the recent case of "Stevens v. Keating," respecting the use of borax, the Lord Chancellor had also expressed an opinion that he did not follow the rule laid down by the judges of the Court of Exchequer. Under these circumstances, and having regard to the opinion of the Lord Chancellor, he thought it would be right to retain the bill upon the table, without making any order for an injunction, giving the plaintiff leave to bring an action at law, either in the Court of Exchequer or Common Pleas.

## LIBEL ON MESSRS. DE TASTET, VIGERS, &amp; CO.

WESTERN CIRCUIT.—BEDMIN, SATURDAY, MARCH 27.

DE TASTET AND OTHERS v. ROSEMAN.—Mr. Cockburn and Mr. Smith were counsel for the plaintiffs; and Mr. Crowder and Mr. Butt for the defendant.—The declaration stated that the defendant had published, or concerned the plaintiffs, a certain false and malicious libel. The defendant had suffered judgment to go by default. The jury were sworn to assess the damages.

The plaintiffs were merchants and mine proprietors, and the defendant had been employed by them as their clerk. In 1846, the plaintiffs stopped their works, and the defendant, having lost their employment, caused the following handbill to be printed and circulated in "W. H. Roseman, late agent under Messrs. De Tastet, merchants and mine proprietors, began to injure his friends and the public, that is to say, the consequence of the failure of the aforesaid firm he has commenced business as an auctioneer, &c." There was no ground for saying that Messrs. De Tastet had failed; and, therefore, they brought this action to set themselves right with the public, and that had given the defendant an opportunity of proving the correctness of his statement, if he could do so. The defendant, however, had suffered judgment to go by default—thereby admitting that he could not justify, and that there must be a verdict for the plaintiffs; and the jury were now to say to what amount of damages they considered the plaintiffs to be entitled. The handbills had been very extensively circulated by means of the post, as well as being stuck all over the neighbourhood; and when defendant was held legal proceedings would be adopted, he replied he did not care, he wanted to expose the parties to the nimbus of his ability. For the defence, it was urged that it was a most unnecessary proceeding to bring this case into this court, instead of taking it before the sheriff, as was usual in all such cases, and that it was done with a view of persecuting the defendant, and putting him to great expense. The word failure had been used by the defendant merely to indicate that the plaintiff's had ceased to carry on their business, but not with any intention to insinuate that the plaintiff's had become bankrupts or insolvents; still it was admitted that the term the defendant had used could not be justified.—The jury assessed the damages at 40s.

ON THE MANUFACTURE OF NITRATE OF COPPER AND OTHER METALLIC NITRATES.—The ordinary mode of preparation of nitrate of copper, intended for dyeing purposes, is by dissolving copper in nitric acid; by this plan an excessive waste ensues, as a great portion of the acid is decomposed into nitric oxide, and evolved red fumes. To avoid this, I pulverize atomic weights of nitrate of soda, and sulphate of copper, adding a little water; they are then spelt together, their water of crystallisation in addition to that added to the mixture, causing them readily to form a saturated liquid. So soon as the slightest appearance of red fumes is perceived, the composition is to be removed from the fire, and allowed to cool. The mass will then be found to be a mixture of nitrate of copper, and sulphate of soda; the latter may be evaporated by crystallisation. If the nitrate is intended as a mordant for dyeing, this is not necessary, as the latter will be exhausted by the goods, leaving the sulphate of soda nearly pure. The nitrates of iron, zinc, and many other metals, may be prepared in a manner exactly similar—indeed, the process will answer in all cases where the metallic sulphate is soluble; from analogy it would probably answer for the nitrates of alumina and magnesia, but I have not yet tried them.—A FRIEND: *Glasgow Mechanics' Magazine*.

ON WATER AS FUEL.—This seemingly strange idea originated in an occasional remark of Sir H. Davy—that on the problematical exhaustion of coal, men will have recourse to the hydrogen of water as a means of obtaining light and calefaction. As the gas used for lighting consists of hydrogen and a little carbon—it is only the latter which would have to be added, after the water had been decomposed into its elementary parts. M. Jobard, of Brussels, was the first who extracted from water a gas, of twice as great an illuminating power as that obtained from coal. This gentleman produces hydrogen gas by the decomposition of vapour, passing through vertical retorts filled with coke, being in a state of white heat. And at the moment of the hydrogen being thus formed, it is mixed with a little carbonic acid gas, obtained by the distillation of oil, tar, or naphtha, or other coarse substance, hitherto useless in the gas manufacture. In the *Bulletin du Musée d'Industrie*, M. Jobard's method has been amply detailed. He says that at the expense of one pennyworth of oil, a light may be obtained during 20 hours, equaling that of 20 tallow candles. Even conceding that M. Jobard's discovery has not quite attained the object of using water for light, fuel, &c., still it has done something towards it. These ideas lead us to a calculation of Prof. Faraday, that the elements of a single molecule of water contain 800,000 charges of an electric battery, consisting of 8 troughs of 2 in. in height, and 6 in. in circumference. At the amount of these slumbering forces, the human mind is startled; because if we should ever be able to elicit and make the available, the power of the mightiest steam-engines would dwindle to nothing—and thus, ends would be attained by the means of things seemingly trifling and worthless, which cannot now be accomplished by any sacrifice or expense.—J. L.—Y: *Civil Engineer*.

IRON SAUCEPANS WITH WHITE ENAMEL LININGS.—Some time ago a paragraph, copied from one of the London papers, appeared in our column, warning parties against the "use of iron saucepans lined with a white enamel." The patentee of these utensils, we find, have proved by long experience, that the caution was quite unnecessary, inasmuch as the utensils are as safe for use as any other metal. They have been analysed at various times by Dr. Ure, Mr. Cooper, and other eminent chemists, and pronounced by them to be perfectly harmless. The paragraph, in all probability, had its unfair origin with some rival in the saucepan trade. We have felt it to be no more than our duty to say thus much on the subject.—*Hampshire Advertiser*.

MONSTER TRAIN ON THE TAFF VALE RAILWAY.—On Thursday, a monster train left the Cardiff Docks, for Navigation House, drawn by the *Aspern*, a fine powerful engine, manufactured by Messrs. R. and W. Hawthorn, Newcastle-upon-Tyne. This is the largest engine at present on the Taff Vale Railway, being a six-wheeled coupled engine; wheels, 4 ft. 6 in. in diameter; 16 in. cylinder; and a 2 ft. stroke. The train consisted of 99 wagons, 21 loaded with iron ore, &c., and 78 empty coal-waggons; gross weight of train 365 tons (exclusive of engine and tender); length of train 585 yards. The gradients of the line are very great, there being a rise from the Cardiff Docks to the half-mile post of about 12 ft., the other gradients averaging about 11 ft. per mile; and the line is one continual rise of gradient throughout to Merthyr. The greatest speed attained was 18 miles an hour. It is worthy of remark, that from the heavy gradients and sharp curves, the engine performed her trip very satisfactorily, having plenty of steam at command during the whole of the journey. We believe this train to be the heaviest, by 60 tons, that has ever been taken up the line; and cannot be otherwise than satisfactory to the directors and company at large, as it fully shows the attention paid to their locomotive power, the most important department in all railways, and also proves the competence of the superintendent, Mr. H. Clements, who was engineer of the *Great Western* and the *Great Britain* steam-ships.—*Merthyr Guardian*.

The amount collected from the workpeople employed in the iron-works and collieries of Messrs. J. Bagnall and Sons, West Bromwich, and paid over for the relief of the distress in Ireland, was the handsome sum of 200*l.*, given by Messrs. J. Bagnall and Sons for the same purpose, makes a total sum of 450*l.* 15*s.* 1*d.* remitted to a benevolent an object.

## RICHARDSON'S REVERSING WATER-WHEEL.

This wheel is designed for the purpose of raising slate from the Coombe Valley Quarry, and is proposed to do the work of a steam-engine, without its attendant expenses—the chief object being to throw all its available power into direct action, without the intervention of gear-work. Its projector, Mr. Richardson, says, that to cause rotary machinery to reverse, it is usual to introduce bevelled gear—all gear-work creates friction—friction loss of power, waste of time, and money. To save time is the great desideratum in conducting the works of a public company; for if this important point is neglected, the profits expected to be derived can never be realised.

and thus the rails will become loosened. In some instances, where there is not room for an adequate thickness of ballast upon and near the crown of arches, cross sleepers of iron have been employed in connection with the chairs; but only three or four have been laid together in this manner, as there was no dependence to be placed upon them. The plates proposed by M. M. Henry and Bessas-Laméglie offer every security in this respect. Iron sleepers have been used with advantage in the construction of railways employed in smelting-works, for transporting incandescent matters, which would burn the wooden sleepers. Plans analogous to this have been proposed at various times without having been put in practice.—*Bul. Soc. d'Encouragement: Newton's Journal*.

## IMPROVEMENTS IN ARTIFICIAL LIGHT.

[Specification of patent granted to R. C. Barleigh, Bath, in the county of Somerset, for certain improvements in artificial light.—*Newton's London Journal*.]

In order that the nature of this invention might be rendered evident, the patentee has given a few preliminary remarks on the nature and properties of solar and artificial light. He states, that in solar light three colours or rays are so combined as to yield in transmission through the azure-coloured medium of the atmosphere, a perfect or colourless light; that is to say, those luminous rays which emanate by radiation from the sun, and reach the earth, consist of three primitive colours, red, yellow, and blue, combined in proportions that form a compound tint, having no predominating tint. Solar light, therefore, or the luminous rays emanating from the sun, being, by composition, the purest and most perfect of any with which we are acquainted, such light must necessarily be the standard of comparison to which every other kind of light is to be referred, in judging of its quality and effects. Now, the difference between the illuminative effects and qualities of solar or natural light, and of that produced by artificial means, will be found to consist principally in this—viz., that in the artificial spectrum, the red and yellow portions or rays greatly predominate over the blue; that is to say, the former are present or emanate from the source of artificial light in quantities over and above such as are required for a just and harmonious combination with the blue rays, to produce a perfectly colourless light, similar to solar light. This excess of red and yellow rays may not only be proved by the prism, but as they appear to emanate in a free or uncombined state, they can be recognised as a positive tint, overlaying all objects on which they fall; hence arises the difficulty or inability of ascertaining with precision delicate shades of colour by artificial light; and the excess of these red and yellow rays also causes pain and fatigue to the eye, when long exposed to its influence. The excess of colour existing in the artificial spectrum, the patentee proposes to correct, by transmitting the rays of artificial light through glass, so prepared as to present, when formed in a proper manner, a medium analogous to that presented by the azure tint of the atmosphere to solar or natural light. By the employment of this invention, which the patentee terms "achromatic glass," the following improvements are said to be gained: The quality of artificial light becomes greatly improved as to purity, being more or less deprived, at pleasure, of its excess of colour, and consequently of its disagreeable and painful glare; its powers of diffusion, and the ability to ascertain by it delicate shades of colour correctly, are greatly increased; the shadows thrown by the objects exposed to its rays are transparent, grey, and cool; thus, altogether differing from the hot and brown opacities forming the shadows of incorrect light; and lastly, the points most highly illuminated by the corrected light are brilliant, pure, and of true tone, in place of being loaded with a glaring and unnatural ruddiness.

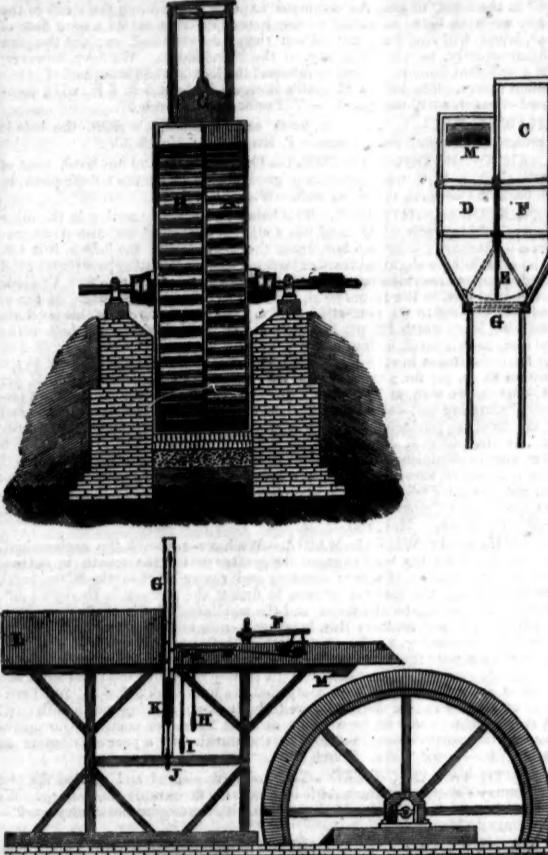
## Of the quality and source of the achromatic power.

It is a law of light, that when luminous rays are transmitted through a coloured medium, a certain proportion of the rays complementary to the colour of the medium presented shall be neutralized, or so disposed of as not to be in active and visible agency as portions of the light transmitted. Thus, if light be made to pass through ruby-tinted glass, it will appear ruddy, because the ruby tint, neutralizing the colours complementary to its own hue—namely, the yellow and the blue, allows the red to predominate in radiation; yellow-tinted glass will also neutralize the blue and the red ray; and blue-tinted glass, the yellow and the red. From this it will be evident, that inasmuch as the excess of colour to be corrected in artificial light exists in the red and yellow portions of the artificial spectrum, the base of the material or compound possessing such power of correction must always be such as shall impart to glass a blue tint or tinge of colour; and such tint or colour will, within certain limits, always be a warranty and assurance that the glass so tinted possesses achromatic or purifying properties with regard to artificial light. The material now in general use for the purpose of imparting a blue colour to all vitrifiable substances—viz., cobalt—in those states of preparation known as "smalt" or "azur blue," and "zaffre," imparts to glass the power of achromatizing artificial light with certainty. The lightest appreciable tint that can be given to glass by these preparations of cobalt (that is to say, a tint or tinge, but just or barely visible to the eye when the glass is in the form adapted for use) renders such glass achromatic, or a purifier of artificial light, by imparting to it the power of correcting some certain portions of the degree of colour existing in its spectrum; and from this, the lightest appreciable tint or tinge of colour (which is called the lowest achromatic power), a succession of powers may be obtained, by a gradual increase in the proportion of the achromatizing material added; and, consequently, in the depth of tint, until that point or power be reached which is the natural boundary of their range; that is to say, a point or power by which all excess of red or yellow colour in the emanating rays is neutralized.

It is manifest that the range between the lowest and the highest achromatic power is capable of numerous divisions into progressive degrees or intensities, each of which will be found to possess some peculiar quality that renders it most desirable, according to the required effects of illumination; such effects commencing at the lowest, and ending at the highest, attainable power or degree of improvement. Thus, the exact tint or power sought in any particular instance would depend on the judgment of the manufacturer, guided by the considerations of the nature of the medium required, as to form and thickness, and the character and quality of the light previous to correction; while the exact quantity of achromatizing material added, to obtain the required result, will depend on its purity and strength as a colouring agent, and also upon the peculiar character of artificial light to be corrected or achromatized. The following are the tests for determining the point of highest achromatic power: The corrected artificial light to be tested being enclosed in a fitting box or lantern, let a direct ray fall on a white substance, as paper, side by side with a direct ray of warm sunlight (as of a summer noon), in a room to which no other ray of light has access. So long as the ray of corrected artificial light is of a warmer or redder quality than the ray of solar light, the achromatic power is short of its highest intensity, and, therefore, within the range of true achromatic powers, or further and more perfect correction. If the artificial light appear colder or bluer, the medium is too deeply tinted, and is not an achromatic but a coloured medium, applicable in no way to the improvement of artificial light by the correction of the excess of coloured rays emanating therefrom. If the qualities of the respective rays be the same, then it will be evident that the highest point has been reached, and the medium is at its highest available power or state. It is scarcely necessary to state, that the nearest approach to the correction of the artificial spectrum fails to produce a light in all respects identical with sunlight; a point may indeed be reached, beyond which the corrected light ceases to improve in purity, as compared with the ray of sunlight; but the essential difference in the two sources of light, as to intensity of combustion, powers of radiation, and penetration of refrangibility, distance of source, and nature of the respective media interposed, must prevent the attainment in corrected artificial light of many qualities which exist in the luminous rays emanating from the sun; but that there is a visible and positive improvement in the quality of the artificial spectrum by transmitting the artificial rays through the achromatic or purifying medium, presented under the form of an achromatic, argand, chimney, or glass, is evident; and that such improvement is caused by means analogous to those which render solar light so perfect, can be demonstrated by practical experiment.

The achromatizing material, though necessarily producing a bluish tinge in the glass containing it, as evidence of its presence, cannot be considered a colouring agent merely, but is an essential constituent of achromatic glass—a constituent on the presence of which, in proper proportions, absolutely and entirely depends the existence of those qualities which render the glass achromatic, and permit its successful application to artificial light. With the exception of the achromatizing material, the ingredients of achromatic glass in no respect differ from those of glass employed in the manufacture of articles such as chimneys, globes, bulbs, shades, or other shapes, which are usually employed to protect artificial light from the influence of currents, or draughts of air or other disturbing causes; or to create the proper currents of air that may be necessary to maintain perfect combustion. The degree of intensity of colour which will be required to correct the coloured rays of artificial light having been ascertained in the manner herein described, the manufacturer will be at no loss to impart the proper tint to the glass, by the admixture of a suitable quantity of achromatizing ingredient. The molten glass having been properly prepared, glasses of various shapes and forms may be made by the workmen to suit the different kinds of burners, such as plain, straight, or other shaped chimneys, bulbs, globes, shades, or glasses of various kinds, as circumstances or cases may render desirable or necessary, or taste may direct.

In place of mixing the achromatizing material with the ingredients of which the glass is composed, so as to cause them to enter and pervade the mixture of vitrifiable materials, the patentee sometimes uses uncoloured glass with blue or coloured glass of a proper tint; or he stains the surface of uncoloured glass, made in the ordinary manner, taking care to impart the proper tint for correcting the coloured rays of light. This operation is performed in the ordinary manner, and with the materials usually employed for staining or staining glass. The coloured rays of artificial light may also be, to a great extent, corrected by reflection, by employing mirrors or reflectors made of porcelain or glass, or transparent glass, the reflective surface of which should be stained, painted, or coloured blue of the proper tint. In conclusion, the patentee remarks, that it is a source of glass having been heretofore stained with various colours, and employed for the various purposes of glassing, or for imparting various hues or colours to objects which have been illuminated by light passing through them; but he cautions, first, the improving of artificial light by the application of glass composed of the substance of substances mentioned above, by employing any other analogous ones suitable for this manufacture, with the addition of a material which, when in mass with the vitrifiable material or glass, is painted on, laid over, or made to cover the same, shall produce or impart a tint or tinge of a blue colour of a varying depth, according to the ratio or proportion in which the blue colouring material is added, painted on, laid over, or made to cover the other material well known ingredients necessary to the formation of glass; whereby the rays of artificial light may be purified or corrected, as above explained. Secondly—the use of coloured shades or reflectors, as above set forth, in which the reflecting surface are coloured, tinted, stained, painted, or covered with some achromatizing material, for the purpose of correcting the coloured rays of artificial light. Lastly—the application of such achromatic glass or reflector, in combination or union with any form or shape that may be employed, for the purposes above mentioned, or which may be suitable for shading, or protecting, or reflecting artificial light from currents of draughts of air, or for producing and guiding such artificial currents of air, the same, as may be found necessary to produce a perfect combination of the matter yielding such light.



The following description will explain the method of its working: A and B represent a front elevation of the wheel; the buckets on the side A, are placed in an inverse direction to those on the side B. C, is an overshot launder, or water-course, flowing on to B. D, a backshot launder, conducting the water on to A, which acts in a reverse manner to that of B. E, a reversing gate, hung on a centre, and having a hollow quoins, similar to a common navigation lock-gate. F, a lever, attached to the axle of the gate, E, which, with its connecting pulleys, H and I, is made to turn the water alternately off and on to the overshot and backshot launders, C and D. G, the stopgate, H, the overshot pulley, I, the backshot pulley, J, the stopgate pulley, having a graduating plate, K, attached for the purpose of regulating the feed. L, feed-head, or reservoir. M, the water way of backshot laundress, D, when the wheel is set in motion; the lever, F, is pulled over, and the gate, G, raised; the water then flows on to the overshot section, B. On the signal being given to stop, the gate G is shut down; and the water in the laundress, C, is just sufficient to drive the wheel half a revolution, when it stops want of its propelling power. On the signal being given to start in a reverse direction, the lever, F, is pulled over; and, on the gate, G, being raised, the water flows on to the backshot section, A, and thus alternately. Thus, nearly the whole of the gravitating force of the water is applied in a direct manner, and must save, independent of the cost of construction, and liability of breakage in gear work, a great amount of power, which, where water is scarce, is a considerable advantage.

## IMPROVEMENTS IN RAILWAY CONSTRUCTION.

ON A NEW MODE OF CONSTRUCTING RAILWAYS BY THE EMPLOYMENT OF CAST-IRON CHAIRS AND WROUGHT-IRON SLEEPERS.

[Being a report in the name of the Committee of Mechanical Arts, by M. Vauvilliers, on Messrs. Bessas-Laméglie and Henry's proposed plan for superseding wooden sleepers.]

In the early period of railways, the cast-iron chairs for holding the rails were supported by blocks of stone; and, in some instances, on embankments which had not been allowed sufficient time to settle, the chairs were fixed upon wooden sleepers, preparatory to the completion of the embankment. This exception has, however, become the general rule; the stone blocks are seldom used, on account of the difficulty of fixing the chairs, and wooden sleepers are almost universally employed. Longitudinal wooden sleepers have also been proposed, and employed in some instances, but have not been generally adopted. The expense attendant on wooden sleepers is very great, from the continually increasing price and scarcity of wood, and also by reason of its rapid deterioration when buried in sand. It is also very difficult to fix the chairs properly with pins, as they rust and eat away the wood.

Messrs. Bessas-Laméglie and Henry have submitted to the Society of Encouragement a plan, in which, instead of the wooden sleepers and cast-iron chairs at present employed, two cast-iron plates are used, 13 in. in length and 15 in. width. The chairs, which are of the ordinary form, are cast in one piece with these plates. The rails are kept at the requisite distance apart by means of a cylindrical wrought-iron rod, about an inch in diameter, which passes through the chairs a little below the rails, and is held fast therein by means of vertical pins, which are prevented from rising by the rails being in immediate contact with them. The plates are prevented from slipping in a longitudinal direction by means of grooves cut in their under side, and this is further assisted by the whole being covered with earth as high as the base of the rails. This improved plan is shown in engraving—fig. 1 being an end elevation of the iron

Fig. 1.





got into the cage at the Church Pit, Church Gresley, to be let down to their usual employment. Daniel Batch, the engineer, let them down, but when they had descended about 40 yards, he heard one of the wheels crack, and immediately stopped the engine. He ran to the pit-mouth, and found the drum running fast, the spur-wheel having broken, and fallen under the drum; the cage was precipitated to the bottom of the pit, which is 270 yards deep; the rope broke off the drum, and went down the shaft, although longer than the depth of the pit. It was between nine and ten o'clock before a rope could be attached to the pumping-engine, and another cage let down; when the bodies of the dead and dying were drawn up.—The jury, after a patient investigation, returned a verdict to the effect:—“That the deceased met their deaths by the accidental breaking of the spur-wheel.”

**Boiler Explosion.**—On Monday last, one of the steam-boilers belonging to J. Wood, and Brothers, Glosop, blew up with great violence, unroofing the boiler-house and knocking down the wall with such force that stones flew across the yard into the mill windows, and smashed both glass and frames—happily no one was near at the time; had it been 5 minutes later, the consequences might have been shocking, as the hands would just have been passing after dinner.—*Derbyshire Courier.*

**GEORGIA TIN MINES (Cornwall).**—We have called attention, on more than one occasion, to these mines, which are situated in a district particularly fortunate in the production of some of our richest and most lasting mines; and it is with great pleasure we hear that the necessary arrangements having been completed, it is intended at once to commence operations on an enlarged scale, and allow Capt. Edward Thomas, and the other mining agents, an opportunity of proving the correctness of their favourable reports upon the capabilities and extent of these mines; and as there are upwards of 11 holes, all rich in tin, and from the circumstance of the lodes being parallel, and contiguous to each other, we are confident we shall be borne out by the result, that this mine will prove as productive as any of the most fortunate mines in the district. The principle adopted in carrying out the “Cost-book” for the management of this company, at once shows the clearness and simplicity of the system; and, from the character and position of the parties immediately concerned, we look forward with some degree of confidence to a favourable result for the full and entire development of a plan, as well conceived, as we are sure will be ably executed. We had intended to have given the reports of Capt. J. Gray, Benjamin Champion, Hannibal Taylor, John Roberts, Edward Thomas, &c.; but, from the great pressure of matter this week, we are unable to do so, but we gather from the reports, that the amount of tin already discovered is sufficient to yield profits, which must be tempting even to the most greedy; and here it should be remarked, the company have not to spend their money in looking for what they may never find, but are at once working upon that which has already been discovered and cleared, and with prospects most encouraging. We shall again remark upon the Georgia Tin Mines.

A mine captain and a mine surveyor, with a party of mechanics, sailed from Liverpool on the 28th ult., per *Adelphi* steamer, in the service of the National Brascan Mining Association.

#### LIABILITIES OF ADVENTURERS IN MINES.

SIR.—I should feel greatly obliged to you, or some of your correspondents, for an answer to the following inquiry:—In a mine near Liskeard, in Cornwall, I have 1-128th share; I have paid cost from time to time to the purser, who at length leaves, or is dismissed; I am then applied to for 7*l.* arrears, when I hold the purser's signature, showing it is but 5*l.*, including the last call of 1*l.* per share; I am, however, told this does not avail me, as the banker's book is the document they are bound by, as to proof of payment of calls, and the handwriting of their own purser is disregarded. Now, Sir, the question is this—supposing the purser, either through negligence and fraud, has omitted to pay my money to the banker, am I, as an individual adventurer, to bear the loss, when I possess the purser's acknowledgment for my payments; or should not the company bear such loss for the misdeeds of their own servant.

Oxford-street, March 28.

#### AN ADVENTURER.

[It appears to us, that if “An Adventurer” can prove he paid any call to the purser, while in the actual service of the company, the directors, or committee of management, can have no further claim upon him for that call, however wrong the purser may have acted.]

#### GENERAL MINING COMPANY.

SIR.—Remembering that several leading articles and letters appeared in your Journal some months since, upon the subject of these mines, I was glad to peruse in a morning paper, some remarks most fully confirmatory, as they are of your opinion as to the probably flourishing state of the concern eventually. Dividends amounting to 2*l.* 10*s.* upon 14*s.*, or say 20 per cent., or rather 40 per cent. per annum, for the 50s., is paid in five months, seems to indicate want of confidence from some cause or another—perhaps want of publicity on the part of the well-intending managers and directors, which should, if possible, be remedied. Formerly no association was so remarkable for its half-yearly meetings as the General Mining Company; and then the reports were preparatory only of calls, instead of dividends. Perhaps, Sir, you, or some of your numerous correspondents, can throw some light upon the nature of the coal, or other business doing by, as well as position of, this company. That the shares of this company are still at 6*d.* on 20*s.* paid up, surprises every proprietor whom I have consulted on the subject. The managers surely need not fear meeting their constituents, under the vastly improved complexion of affairs, however stormy the meeting of the proprietors may have been formerly—when railways, fresh outlays, new buildings, &c., were the whole burthen of the song, with their very unpleasant accompaniments of large calls. There is such a thing as a meeting “with closed doors,” as formerly, and why not now? In short, though every confidence has been placed, and perhaps deservedly so, in the managers—on the other hand, confidence in the proprietors, on the part of the respectable directors, is also equally called for, and can do no harm, if it does no good.

March 31. J. W., an Original Proprietor.

[The remarks of our contemporary will be found in another column.]

#### WHEAL CURTIS MINING COMPANY.

SIR.—I perceive that a mistake occurs in my letter relative to this mine in last week's Journal—it should have been a 45-inch engine, 5*f.* stroke, instead of a 42-inch engine, and 2*f.* stroke. Your noticing this will oblige.

Cumbers, March 30.

H. A. VIVIAN.

#### CARADON VALE MINE.

SIR.—In perusing your valuable columns of last week, I was not a little disappointed to find it there stated, that the Caradon Vale sett is about to be put to work again, as I have been anxiously waiting to hear that the sett was altogether given up, that I might have an opportunity of securing her for the company I am now a servant to. The sett is beautifully situated, having on one side a south-easterly slope, in which there are two pretty valleys; I know it to be a piece of ground well worthy the attention of mining speculators, and do fully corroborate all that has been said about the lode in the adit. I have seen some good portions of copper taken from that lode, both in the adit and other parts of the sett, a very little below the surface, with large quantities of mastic, good spar, prian, peach, and other ingredients congenial to copper; the ground in, as before stated, a light blue killas, quite congenial to copper; and I have no doubt, were the company to carry out the speculation vigorously, and put up a steam-engine, they would be handsomely remunerated for the outlay.—JOHN SEYMOUR: *Caradon Wheal Hooper*, March 26.

#### THE POLGOOTH MINE, NEAR ST. AUSTELL.

SIR.—I am one of the labourers in the above mine, and, not knowing who the adventurers are, have taken the liberty of addressing this to you, with a hope that, by publicity or private information to parties interested, a stop may be put to a system practised here, that is alike injurious to them and to ourselves. The case is simply this: Mr. David Burn, a Scotchman, and nephew, by marriage, to Mr. Thomas Bell (the manager), is our purser, who, in addition to his original business, has opened (in copartnership, as is supposed, with his uncle) a tally-shop, for the sale of sloop linen, woollen drapery, haberdashery, &c., where, though the charges are from 25 to 50 per cent. higher than at regular places of trade, we, as a matter of course, are obliged to buy. Those amongst us, who may, from motives of economy, or aversion to being driven, cut less deep into the tally ledger, feel it, by having no chance except in rejected pitches at a low tribute; whilst others, less particular, and whose families are fond of a tawdry appearance, obtain a choice of places, with earnings much beyond the common average. The workpeople at present are comparatively few, many more being expected to be taken on soon; but, limited as their number is, it is estimated that Messrs. Bell and Burn are making a clear gain out of them of upwards of 20*s.* a month, over and above the fair profits of trade, and exclusive of their salaries. In addition to the shop, Mr. Bell has taken a small farm, upon which, with the exception of two stems a month (pay day and substat day), he constantly employs one owners' account man, often two, and sometimes more. Altogether, I have no doubt they find Polgooth a comfortable family mine—whether the adventurers under such management will find her a profitable one, a few short months will, in all probability, determine.—THOMAS PESHALL SMITH: March 26.

**CWMSHAW IRON FURNACE.**—A correspondent informs us, that the produce of this furnace, for the week ending March 20, amounted to the extraordinary quantity of 150 tons of cold-blast pig-iron. Mr. Musket, in his valuable work *On the Manufacture of Iron*, informs us, that about the year 1780, there were in all England 55 furnaces, making annually 17,850 tons, or little more than five tons a week of pig-iron from each furnace. We have heard complaints made, that the manufacture of iron is still in its infancy. We are no great judges of this matter; but comparing “the infant” of 1780 with that of 1847, we think it will be allowed that “The Metallic Babe” has grown considerably.—*Monmouthshire Merlin.*

MR. ANDREW SMITH, C.E.—Most of our readers are aware that this gentleman has recently withdrawn himself from his west-end engineering establishment, in favour of his son, and devoted himself exclusively to superintending the manufacture of his galvanised iron wire-rope, and lightning conductors, at Poplar. The occasion was deemed opportune by some friends, to testify the feeling they entertained for Mr. Smith, whom they accordingly invited to a dinner, and presented with a beautifully chased silver snuff-box, with the following inscription:

PARVUM PIGNUS NON PARVUM AMICITIA.  
PRESENTED TO MR. ANDREW SMITH,  
IN THE WARMEST SINCERITY OF SPIRIT,  
BY A FEW FRIENDS,  
WHO ADMIRE HIS SOCIAL UBRANITY,  
AND TESTIFY TO  
THE SOLID VIRTUES OF HIS CHARACTER.

**GUN-COTTON.**—M. Schönbein has at length broken silence as to the history and constitution of gun-cotton. In regard to the latter careful analysis gives the following results:

	Experiment.	Calculation.
Carbon	37.49	38.1
Hydrogen	3.54	3.1
Azote	14.26	14.5
Oxygen	54.77	54.3

According to M. Ballot's analysis, pure xyloidine is composed of:

	Experiment.	Calculation.
Carbon	37.59	37.31
Hydrogen	4.99	4.84
Azote	5.7	5.75
Oxygen	52.55	52.09

The slightest attention, Prof. Schönbein says, will suffice to show that the composition of gun-cotton differs considerably from that of xyloidine; and that it is a compound poorer in carbon and richer in oxygen than the discovery of Braconnet; that consequently in burning, it ought to produce more gas, have a greater explosive force, and leave less residue than xyloidine. The difference between these two substances are likewise displayed in other properties; for instance, xyloidine, especially at a high temperature, is dissolved by concentrated vinegar; and when water is added, it separates again unaltered; gun-cotton is insoluble in this acid. At the temperature of boiling-water xyloidine dissolves in hydrochloric acid (sp. gr. 1.12) and in nitric acid (sp. gr. 1.38) into a colourless liquid, whence water cannot separate xyloidine. Gun-cotton is entirely different to thiocyanic. Xyloidine inflames at a temperature of C 180°, gun-cotton exposed to a temperature of

210° inflames instantaneously.  
260° at the end of 12 seconds.  
175° 30 seconds.  
150° 12 minutes.  
130° does not inflame at all.

M. Schönbein and Baetiger promise in a short time extended details on the explosive force of gun-cotton, and on the manner of preparing it.

**PROGRESS OF THE ATMOSPHERIC SYSTEM.**—We are happy to be able to state, that the full size working model of Messrs. Clarke and Varley's resilient tube, on the Blackwall line, which is being laid down as an experiment to test its capabilities, is rapidly approaching completion; and we hope in our next Number but one, to be able to give some account of the results of its working. A pair of large and highly-finished air-pumps are already fixed in the engine-house of the railway, to be worked by the large Blackwall engine; the rails are laid, and the greater portion of the tube is fixed. Much interest is excited, not only among our own engineers, but, we understand, a number of scientific gentlemen in France are anxiously waiting to see the working of this simple, yet beautiful, system.

**TRENT VALLEY RAILWAY.**—The works on this line are in a most forward state. Large bodies of workmen are employed night and day, as well as on Sundays. The road throughout, we understand, is permanently laid and ballasted; the whole of the embankments, cuttings, and slopes, are complete, and the stations and buildings are nearly finished. On Wednesday next, the 7th inst., the directors, and a select party of their friends, with the contractors, will make an experimental trip along the whole length of the line. We are also informed, that on the 16th inst., the line will be generally opened for the carriage of goods, although it is not expected that it will be made available for passenger traffic before the middle of next month.

**THE LATE ACCIDENT ON THE HULL AND SELBY RAILWAY.**—The Government railway inspector (Capt. Coddington), having been engaged for two days in an inquiry into the causes of this accident, has made his report to the commissioners, in which he states that the evidence did not supply any explanation of the real cause of the accident, but only detailed its effects; yet, from a careful inspection of all the circumstances, he was enabled to form a generally correct opinion. It appears the train was drawn by two engines, and consisted of a passengers' luggage van, three fish waggon, eight passengers' carriages of different classes, and one fish wagon! The rails have been laid down seven years, and are only 51 lbs. per yard—totally insufficient for the greatly increased weight of the engines now in use. The driving-wheels of the two engines were not of the same size; that the oscillations of them were not equal, and, having acquired sufficient violence, bent the rail so suddenly, that it formed an angle; that the waggon, not being fastened closely, passed on, but a carriage behind, entering the angle, came to a dead stop, when all the remainder of the train was dashed against it with sufficient force to destroy and throw them all off, except the two last. He seems to trace the cause of the passenger carriage suffering the most severely, from the loose and careless manner in which the fish waggon were coupled together, as, otherwise, they would have borne the brunt of the concussion, and saved the passenger carriages, perhaps, entirely harmless.

The Buckinghamshire Railway Company require, for the superstructure of their permanent way, 6000 tons of rails, and 4000 of chairs.

**DISCOVERY OF A COAL MINE IN THE QUEEN'S COUNTY.**—Within the last few weeks, a rich seam of coal, 8 ft. 2*in.* in depth, has been discovered on the lands of Blandsford, in the Queen's County, the property of John T. Bland, Esq., which, it is expected, will give much employment to the people of the vicinity, and be of great use to the country at large. Preparations are being made for working it without delay.

March 31. [The remarks of our contemporary will be found in another column.]

H. A. VIVIAN.

**COOMBE VALLEY SLATE COMPANY.**—Capital £30,000, in 1000 shares, of £5 each.—Deposit £1 per share.

CONDUCTED ON THE COST-BOOK SYSTEM.

OFFICE, No. 5, WHITEFRIARS-STREET, CITY.

BANKERS.—Messrs. Williams, Deacon, and Co., London.

The time having expired for the payment of the deposits on the first portion of the allotments, and intimation having been given by some highly respectable persons, that the time allowed was much too limited for the convenience of payment, the committee have, therefore, considered it prudent to extend the time of such allotments not paid upon—notice of which (by post) will be given to each person.

C. S. RICHARDSON, Secretary.

**COOMBE VALLEY SLATE COMPANY.**—Notice is hereby given, that a SPECIAL MEETING of the shareholders will be HELD in the Committee-room of the Office, 5, Whitefriars-street, City, on the 8th of April, at One o'clock P.M., for the purpose of considering the best means of immediately prosecuting the works on the quarry, as well as for other business connected therewith.

Persons interested in this undertaking, who hold letters of allotment, are earnestly solicited to attend the meeting, as the future plan of operations, with a general description, will be laid before them.

C. S. RICHARDSON, Secretary.

Just published, Part I.

**COMBUSTION OF COAL, CHEMICALLY & PRACTICALLY CONSIDERED.** With coloured plates.

By CHARLES WYE WILLIAMS, Esq.

London: Simpkin, Marshall, and Co., and J. Weale—Birmingham: Wrightson & Webb.

**STEAM COAL—WITHOUT SMOKE,** as per experiments made at her Majesty's Dockyard, Woolwich.

**CAMERON'S COALBROOK STEAM COAL, AND SWANSEA AND LOUGHOR RAILWAY COMPANY.**—(Completely Registered and Incorporated.)

The directors are now prepared to supply steam ship companies, manufacturers, shippers, and others, with the company's steam coal, either at the company's wharf at Swansea, or in London. A statement, showing by comparative trial the superiority of this coal for steam purposes over every other, and a scale of prices, may be had on application at the company's offices here, or at their wharf at Swansea.—March 18, 1847.

19, Essex-street, Strand, March 26, 1847.

Just published, Part I.

**WILLIAM JOYCE, DESIGNER AND ENGRAVER ON WOOD.**

W. J. respectfully informs AUTHORS, BOOKSELLERS, PRINTERS, &c., that, having

had long practical experience in DRAWING and ENGRAVING, of every variety—viz.—Inventions of all descriptions, for Engineers, Machinery, Figures, Landscapes, Architectural and Perspective, Agricultural, and Anatomical subjects; Specimen Books for Civil Engineers, Ironfounders, Lamp Manufacturers, Silversmiths, and every other Branch requiring Illustrations, he is enabled to speak with confidence, as to the satisfaction he could give with regard to promptness, accuracy, and economy.

Weekly and Monthly Publications Contracted for.

THAMES TUNNEL COMPANY.

The number of passengers who passed through the Tunnel in the week ending March 27, was 47,764; amount of money, £119 6s. 6d.

#### Current Prices of Stocks, Shares, & Metals.

STOCK EXCHANGE, Saturday morning, Eleven o'clock.

Bank Stock, 7 per Cent.	Belgian Bonds, 4 <i>1/2</i> per Cent., 5 <i>1/2</i>
2 per Cent. Redundant Ann., 7 <i>1/2&lt;/</i>	



## NOTICES TO CORRESPONDENTS.

It will at all times save much trouble, and frequently considerable delay, if communications are simply directed—

To the Editors,

*Mining Journal Office,*

26, FLEET-STREET, LONDON.

Also, to avoid trouble, Post-Office Orders should always be made payable to WILLIAM SALMON MANSSELL, as acting for the proprietors.

DR. CLANNY'S IMPROVED SAFETY LAMP.—Dr. Clanny has intimated his intention of forwarding one of his lamps to our office, for the inspection of parties interested: when he reaches us, we shall be happy to attend to Dr. C.'s request, and exhibit the lamp to all inquirers.

"An Ironmaster" should file the Journal, as he receives it—he will find the volume of much use for reference. We will obtain the information he requires, and publish it in an early Number.

*Erratum.*—In our "Mining Notabilia" of last week, under the head of Marke Valley, &c., stratification of the ore, &c., and stratification of the country.

A description of the Barrow Viaduct, on the Irish Great Southern and Western Railway, appeared in the Journal of the 6th of March.

The MINING JOURNAL is published at about Eleven o'clock on Saturday morning, at the office, 26, Fleet-street, and can be obtained, before Twelve, of all the news agents, at the Royal Exchange, and other parts of London.

## THE MINING JOURNAL

Railway and Commercial Gazette.

LONDON, APRIL 3, 1847.

In presenting our readers with the usual quarterly return of the sales of copper ores in Cornwall, it is gratifying to find, that, on the quarter ending 25th March last, there is an evident improvement—the return for the previous quarter having been 35,079 tons, producing, in money, 191,197. 9s.; while, on that just ended, it is 33,192 tons, producing 194,499. 7s. 6d.—showing an improvement of 3302 tons on a diminished quantity of ore of 1887 tons. The quantity of ore raised has been nearly alike in proportion in both quarters—the above deficiency in the latter having arisen from 11 ticketings only having taken place; while, in the former, there were 12.

An improvement has also taken place in the standard—the average of the quarter, ended 25th Dec. last, having been 101. 13s., on a produce of 8d.; while that of the last quarter was 105. 6s., on a produce of 8d.; the average price also, of the former, was but 51. 9s.—the one just ended 51. 18s. 8d.—The following are the quantities purchased by the smelting-houses—viz.:

	Tons	£	14	36	1	6	5
Mines Royal Company	2298	£14,361	6	5			
English Copper Company	4670	27,069	15	3			
Vivian and Sons	6805	35,595	13	1			
Freeman and Co.	4011	23,654	16	5			
Grenfell and Sons	4612	28,333	5	8			
Crown Copper Company	156	841	7	2			
Sims, Willyams, and Co.	3782	20,579	12	0			
Williams, Foster, and Co.	6588	43,563	10	6			
Total	33,192	£194,499	7	6			

An extraordinary decrease has taken place in the sales of ores at Swansea in the past quarter. For the quarter closing the year 1846, we had to notice a reduction, as compared with the previous one, of 12,155 tons, and in money 123,791. 19s. 6d.; the quarter just ended shows a still further falling off of 4555 tons, and money 55,146. 7s.: the total of sales for the first quarter of 1847 being 8850 tons, producing 122,234. 7s. 6d.—the last of 1846 having been 13,405 tons, producing 177,380. 11s. 6d. The former quantity was purchased by the several smelting companies, as follows—viz.:

	Tons	£	20	616	6	6
Freeman and Co.	536	8,926	6	0		
Grenfell and Sons	1671	25,429	13	0		
Crown Copper Company	16	80	4	3		
Sims, Willyams, and Co.	1072	18,598	1	6		
Vivian and Sons	1772	18,166	16	6		
Williams, Foster, and Co.	2199	30,146	19	9		
Total	8850	£122,234	7	6		

The following are the produce of the principal foreign mines during the quarter—viz.: Australian, 1675 tons—25,126. 4s. 6d.; Cobre, 2041 tons—26,614. 14s.; Cuba, 826 tons—5052. 1s. 6d.; Chili, 1442 tons—36,751. 8s.; Santiago, 251 tons—3759. 11s. 6d.

The Directors of the VAN DIEMEN'S LAND COMPANY seem to be extremely liberal in their proposals to the more respectable sort of emigrants who may select the lands of this colony. The chairman signified, at a late meeting, that to a man of agricultural knowledge and energy, possessing from 200*l.* to 300*l.*, the company would advance an equal sum if required, besides lending him bullocks, sheep, and implements of industry. Considering that the interest for the loan of money in the colony is from 10 to 12 per cent., and that the climate is extremely healthy, there is no doubt that these terms will prove attractive and advantageous to emigrants from Great Britain and Ireland. We refer to the proceedings at the late meeting in another part of this Journal.

**RAILWAY WHEEL TIRES—IMPORTANT EXPERIMENT.**—In consequence of the late fatal accident, which took place on the Great Western Railway, near Southall, by the flying off of a tire of one of the wheels of the engine, great efforts have been made by the Great Western Railway Company, so to secure the tire as to prevent it separating from the rim of the wheel over which it is laid, and to obviate, as far as is practicable, all risks of future accidents from broken tires. The present tires are patented steel ones, which are merely held on the wheel by contraction of the metal, but without any fastening; and not feeling satisfied with the slender and uncertain security of the rivets recommended at the Southall coroner's inquest, by Messrs. Braithwaite and Mr. Connell, the company have caused experiments to be tried with a tire fitted on a new principle, the invention of a gentleman connected with the company. The experiments which have been made are highly satisfactory, the tire having, from its peculiar mode of fastening, successfully stood the severe test of being cut in two, in two places; and in that state has been run at a high speed with heavy loads, without the smallest perceptible alteration of its position. Should this invention stand the test of further trials, no doubt, it will be generally adopted on railways, and will tend greatly to increase the feeling of security in railway travelling.

**BRIMINGHAM AND OXFORD JUNCTION RAILWAY—THE BATTLE OF THE GAUGES.**—This action (Mozley v. Alston), arising out of the contest between the London and North Western and the Great Western Company, came before the Vice-Chancellor of England, on Wednesday last, in the form of a petition, praying for an injunction to restrain the directors of the company from acting in that capacity; and that the common seal, papers, and books of the company should be given up to persons whom the bill represented to be the lawful directors. The case involves some curious points, and has been thought of sufficient importance for the appointment of a committee of the House of Lords, to inquire into certain allegations affecting the North Western Company. In the *Mining Journal* of the 20th ult. will be found an explanation of the position of the two companies throughout the affair, and which now awaits the decision of a court of equity. Mr. Fixroy Kelly opened the case in support of the demurrer, and contended that, if this bill could be maintained, a separate bill, on the same ground, might be filed by every shareholder in the company, amounting to some thousands. He quoted cases in support of his view of the question, and was followed, on the same side, by Mr. Stuart, Mr. Holt, and Mr. Lake Russell. Mr. Bethell opened the case in support of the bill, and, after some introductory remarks, said, the bill was filed as against rebels who held their sovereign in captivity; and went through the history of the company, from the meeting, held on the 18th March, 1846, for increasing the number of directors. He contended, that the parties complained of as directors could not be prevented from committing suicide on the company, unless restrained by that court. Mr. Parker, Mr. Wilcock, and Mr. S. Smith, are to follow Mr. Bethell, and the case stands adjourned to the 18th inst. Although the case itself is of particular interest, and the decision is looked forward to with much anxiety, the arguments themselves are dry and uninteresting.

## IMPORTANT DISCOVERIES DURING THE LAST YEAR.

## ETHER—GUN-COTTON—SMELTING COPPER BY ELECTRICITY.

We apprehend that there can be no doubt, that the year 1846 will be memorable to the end of time, for the remarkable extensions, or new applications, of human knowledge, which will come before future historians, as rendering illustrious its narrow limits. Most evident is it, that we are now living in the days predicted by the Hebrew prophet—when "many shall run to and fro, and knowledge shall be increased."

1. Foremost among these may be placed, the use of ether, inhaled for facilitating surgical operations. Like all other appliances of this kind, it meets with failures, and even with evil results, in a few cases; but, for one fatal result, and five failures, we have five hundred instances of vast benefit—in many of which, beyond all doubt, lives have been saved, which would otherwise have been lost. Without describing it as infallible, or in all cases safe, or to be relied on, there can be no doubt that this discovery has conferred vast benefits on mankind.

2. The substitution of a new explosive material—the gun-cotton—in place of gunpowder, is another remarkable event. The extent of its utility is not yet ascertained. Whether it will be largely adopted in warfare, is still a point on which no decided opinion has been formed; but of its great utility in all blasting and mining operations, not the slightest doubt can exist. It is both cheaper and more powerful than gunpowder; and the absence of smoke gives it a decisive advantage. There can remain no question, that in all works of this description, the new agent will rapidly supersede the old one.

3. The third discovery of 1846 is, perhaps, of greater importance than either of the former—we allude to the lately-patented process for smelting copper by means of electricity. The effect of this change will be quite prodigious. It produces, in less than two days, what the old process required three weeks to effect; and the saving of fuel is so vast, that in Swansea alone, the smelters estimate their annual saving in coals at no less than five hundred thousand pounds! Hence it is clear that the price of copper must be so enormously reduced, as to bring it into use for a variety of purposes, from which its cost at present excludes it. The facility and cheapness of the process, too, will enable the ore to be largely smelted on the spot. The Cornish mine proprietors are anxiously expecting the moment when they can bring the ore which lay in the mine yesterday, into a state to be sent to market to-morrow; and this at the very mouth of the mine. In Australia, also, the operation of this discovery will be of the utmost importance; 10,000 tons of copper ore were sent from Australia to England last year, to be smelted at Swansea; and the result was only 1600 tons of copper. But Australia, in future, will smelt her own copper, by a 36-hours process—saving all this useless freight of the 8400 tons of refuse; and saving also the cost of the old and expensive process. In a very few years, Australia will send to market more copper than is now produced by all the rest of the world; but if our future penny-pieces are to bear any proportion to the reduced cost and value of the metal, they must be made of the size of dinner-plates.

## PREVENTING AND REMOVING INCRUSTATION IN STEAM-BOILERS.

[Specification of patent granted to Maximilian Francois Joseph Delfosse, Esq., late of Paris, but now of Regent-street, in the county of Middlesex, for improvements in preventing and removing incrustation in steam-boilers.]—*Newton's London Journal.*

This invention consists in preventing and removing incrustations in steam-boilers, by the addition to the water used therein, of a certain mixture, which acts on the precipitable matters contained in the water in such a manner as to prevent the forming any incrustations on the interior of the boiler, and which will also remove any incrustations that may have been previously formed. The mixture is termed by the patentee the "antipetrifying mixture;" the materials composing it are: first, dry tannic or gallic extract, obtained from the bark of oak and other trees, or from gall nuts or roots, or from any other substances containing the same; secondly, hydrate of soda, or soda-deprived of its carbonic acid; thirdly, muriate of soda; and fourthly, subcarbonate of potash. The proportions in which these ingredients are used, and the quantity of the mixture employed, will vary with the greater or less impurity of the water, and according as the boiler is stationary or locomotive. If the boiler is a stationary one, and it is fed with fresh water, the amount of antipetrifying mixture required for 336 hours' consumption per horse-power may be made by mixing together 12 ozs. of muriate of soda, 24 ozs. of hydrate of soda, 2 drachms of the dry tannic or gallic extract, and 1 oz. of subcarbonate of potash: for locomotive boilers, travelling on an average about 140 miles each day, the quantity of the mixture per horse-power is increased one-fifth. If the water should be brackish, or a mixture of salt water and fresh (such as the water of tidal rivers), the patentee omits the muriate of soda, and uses 6 ozs. instead of 24 ozs. of hydrate of soda, and 5 drams instead of 2 of the dry tannic or gallic extract; the mixture is also prepared in this manner when sea-water is used in the boiler. The patentee prefers to introduce the mixture into stationary boilers, in quantities sufficient for two, three, or more days; but locomotive and marine boilers are to be supplied daily with a portion of the mixture, corresponding with the amount of duty to be performed. The mixture may be introduced into the boilers of stationary engines, and into either the feed-tanks or boilers of marine engines; but for locomotive engines, it is better to add a portion daily to the water in the tender. The patentee claims the employment, for the prevention and removal of incrustations or petrifications in steam-boilers, of the antipetrifying mixture above described, and of any analogous mixture containing for its principal or essential ingredients fixed alkaline matter combined with tannic or gallic extract.

**COAL IN SOUTH AFRICA.**—The attention of the Colonial Government has been directed to the coal fields in the colony of the Cape of Good Hope. The beds of coal which were discovered some years since at Colesberg, are not available, owing to their distance from the sea-coast; but recent information goes to show that the coal-fields of the new settlement at Port Natal promise to be the means by which steam navigation is to be extended in the southern hemisphere. The following official notice, issued from the Colonial-office, at Natal, will direct the attention of the colonists to the value of this mineral product:—"Inquiries having been addressed to this office by parties interested in steam navigation, relative to the quantity and price of native coal, to be obtained at Port Natal, his honour the Lieutenant-Governor requests that landed proprietors who may have found coal, of quality equal to that brought to this market from the northward, in situations more favourable for conveyance to the port, will forward specimens to the Minister of Commerce on the 7th of December, 1845, for the authorisation to import foreign tubes, on paying, as import duty, the difference between the price of English tubes, and that which we had agreed to pay to the contractors. The order would have consisted of 350 tubes of 68 centimetres in diameter, and 1800 tubes of 38 centimetres. The Minister of Commerce replied, 'that it appeared, from the inquiries he had made, that the French establishments were able to supply all the tubes of small dimension; and that of the large tubes (500) could be delivered in time—so that it would only be necessary to import 350 tubes from abroad to enable the branch to be opened at the period appointed.' As to the duty to pay, he fixed it at 44*fr.* the 100 kilograms—thereby imposing on tubes the same duty as is levied on detached pieces of machines. We immediately replied to the Minister of Commerce, that the conditions on which this permission was accorded were such that we could not accept them—that duty being equal to 150 per cent. of the price of the tubes in France, which, according to our treaties, was 29*fr.* the 100 kilograms. If we had accepted the permission, we should have subjected our contractors to a loss of 230,000*fr.* for a small portion of the whole supply; and this sacrifice, great as it was, would have given us no guarantee with respect to the delivery of the rest of the tubes. We, therefore, insisted on our first demand and invoked precedents, which proved that, in analogous cases, the Government had acted in the manner we begged it to do. No reply having been made to us, we had to consent to a prolongation of the periods of delivery. According to these new arrangements, the large tubes necessary were to have been delivered by April, 1846, so as to allow them to be laid down by the 1st of May—the remainder were to have been delivered in such portions as to enable the whole to be supplied in the month of June following; but these new arrangements were no better kept than the preceding ones. The delivery of the large tubes was only completed in December last. As to the 1800 small tubes, which, according to the statement made to the Minister of Commerce, were to have been delivered before the month of May, 1846, we had only received 76 at that period; and the remainder will probably not be delivered before the end of 1847! In fact, of the tubes ordered in March, 1845, for a distance of 8850 metres (about a mile and a half), we have only received sufficient for a distance of 3327 metres." Does not this prove all that I asserted? And does not this prove triumphantly the infamy and absurdity of the ironmasters' monopoly? The report declares that the delays in question have caused heavy losses to the company; and that it is their determination to bring an action against the contractors for their scandalous neglect to fulfil their agreements. Every honest man must wish that they may obtain enormous damages.

The *Journal des Chemins de Fer* states, that 40,000 chairs, and 10,000 rails, have recently been delivered on the Dijon and Chalon section of the Lyons Railway; and that this section will probably be opened for traffic in the course of a few months. The same journal, referring probably to your articles on the scarcity of slate in England, asks why zinc is not employed instead of slate or tiles? In Paris, that article is now generally employed for covering in houses and buildings; and it bids fair shortly to supersede the use of slate altogether.

A letter from St. Dizier of the 25th, says—"Affairs languish, and are treated with difficulty; few orders for iron arrive. If this state of things continues a little longer, prices must decline. Nothing has been done for some time in *fontes blanches*; they are offered at 399*fr.* for large lots."

Paris, Wednesday.

**BELGIUM.**—In February last, this country imported 388 tons of coal from France, and 11 tons from other countries; in January and February, the importations were 921 tons from France, and 32 from other places. The exportation in February was 98,144 tons to France, 12,705 to the Netherlands, and 2359 to other countries; in January and February, it was 130,660 to France, 18,257 to the Netherlands, and 4011 to other countries. In February the exportations to France of cast-iron *en guernes*, and cast-iron *en épures*, was 7,723,784 kilograms; and in January and February, 9,895,605 kilograms. This was nearly one-third more than in the same period of 1845, and more than double that of 1845. The Zollverein was the only other place to which Belgium exported cast-iron. No exportations of rails were made either in January or February. Of *fonte ouverte* exportations were made chiefly to the Netherlands, and in much smaller quantity to the Zollverein; the total quantities for January and February were 25,697 kilograms, showing a considerable decline compared with the same period last year, and a still greater decline compared with 1845. The exportations in January and February of *fontes de fer battu* amounted to 123,014 kilograms, being a great increase over those of 1845 and 1846. In the same period, 795,146 kilograms of rails were exported, principally to Holland, Brazil, Austria, and Turkey; an increase over the same period of 1846, but a decline over that of 1845. The exportation of machines and mechanical pieces shows an increase; it was 155,608 kilograms. The greater part was taken by the Zollverein, Holland, and Austria; Spain took some, but France little. In decorated pieces of machines, there was an increase of nearly two-thirds over 1846—the quantity was 111,745 kilograms, of which the Zollverein took nearly one-half, and Austria more than one-sixth. Of zinc, the ex-

## PROGRESS OF FRENCH MINING INDUSTRY.

[FROM OUR PARIS CORRESPONDENT.]

In a recent speech, in the Chamber of Deputies, M. Guisot announced that the Government intended shortly to present a bill relative to the tariff. Is it proposed to recommend a general revision of the Custom-house duties similar to that of Sir Robert Peel? Is it intended to make merely a few trivial reforms? Above all, what is to be done with the iron and coal duties, the keystones of the monopolist arch, the most burdensome and most unjust of all the taxes paid by the French people?

The Ministry of Marine advertised in the newspapers of yesterday, that on the 29th of April it will receive offers of contracts for the supply to Cherbourg of 7000 kilogrammes of yellow copper, 900,000 kilogrammes of ordinary cast-iron, 900,000

portion was 432,987 kilogrammes, a slight decline compared with 1846 and 1845; almost all went to France. Of zinc *lamine*, the exportation was 151,928 kilogrammes, being less than in the two preceding years. England took 49,443 kilogrammes, the United States 55,521 kilogrammes, but none were sent to France.

In a previous letter, it was stated that contracts were to be received for the supply of rails, &c., for the Brabant Railway. The contracts were accorded the other day, on the receipt of written offers in the usual form. One lot, of 100 tons, was taken by the Société du Couillet, at 350 fr. the ton; the second, of 1,100 tons, at 350 fr., by M. Pastor, of Seraing; a lot of 250 tons of chairs, was taken by M. Deschene, of Liège, at 199 fr. the ton; and another lot of 250 tons, at 196 fr.

The Company of the Mines of Bleberg is to meet at Brussels on the 15th of April. The Company of the Furnaces and Coal-pits of Marcenelle and Couillet are informed, that from the 1st to the 15th of May, they may receive two new shares of 500 fr. for every one of 1000 fr. of the old emission, pursuant to the resolutions adopted in March, 1846. The Company of the Hauts-Fourneaux de Monceaux will pay 120 fr. dividend per share from the 1st of April. The meeting of the Charbonnages Belges Company, which had summoned in Paris, is to be held at Mons, on 2d of May, in compliance with the wishes of the majority of the shareholders.

In 1837, the expense to the Government of the Department of Mines was 89,410 fr.; and, in 1846, it had increased to 172,000 fr. The Government demands a further increase for 1847; but it is not expected that the Chamber will accord it.

On the State Railway, 41,000 rails have to be replaced—13,000 of which must be supplied immediately. The expense of these 13,000, with the chairs, &c., is estimated at 900,000 fr.—*Brussels, March 30.*

**SILVER AND GOLD MINES OF THE NEW WORLD.—No. VIII.**

Worked in an incomplete and barbarous manner, the mines of Pisco yield commonly at present as much as 300,000 marks (90,000 kilogrammes) of silver; including smuggling, it is nearly 640,000. The Spanish Government, perhaps on account of the great distance, undertook and accomplished less for the promotion of Peruvian industry than for that of Mexico. This cause has not a little contributed to confine the metallurgical development of Peru. I have already alluded, in Mexico, to the magnificent road which, from Vera Cruz, arrives at Perote, the summit of the Cordilleras; it is one of the fruits of the colonial system; but under the system since the Independence, it has not only not been prolonged, but has been half destroyed. In Peru the *conquistadores* found roads established by the Incas from Cuzco, their capital, to Quito, near 500 leagues in length, over hill and valley—they were comparable to the finest Roman roads. Similar communications, directed from the mines to the coast, would have changed the face of the country in general, and the working of the mines in particular. The Spaniards, after having allowed the roads of the Incas to become ruined, did not establish new ones; but, at least, these constructions of the first masters of the country, of which the ruins may be seen in a hundred places, and which astonish the European, show what might be done. For the population it is a remembrance, and for the government an example, which will remain as a crushing reproach, until one shall arise to profit by it.

Taking the figures supplied by M. de Humboldt, which come down to 1804, and taking to complete, and, in certain parts, modify them,\* the information furnished by M. Jacob, by Mr. McCulloch, in his *Dictionary of Commerce*,† and by some travellers who traversed the country, I find that the production in precious metals of the Peruvian Andes, comprising all the mines of the former vice-royalties of Peru and Buenos Ayres, or of the two modern republics of Peru and Bolivia, amounted in the minimum, to 1st January, 1810, to 2,403,888,000 piastres, of which 2,197,803,000 represented 53,703,316 kilogrammes of silver metal, and 206,085,000 piastres represented 304,800 kilogrammes of gold; to 1st Jan., 1846, the amount was 2,608,700,000 piastres, of which 2,380,300,000 in silver, and 228,000,000 in gold—making, in French money, 14,088,000,000 francs, of which 12,925,000,000 fr. in silver, and 1,163,000,000 in gold, or 58,163,000 kilos of silver, and 337,725 kilos of gold. Thus the mines of the Peruvian Andes yielded less by 1,000,000,000 fr. than those of Mexico. The proportion of the two metals is 1 kilogramme of gold, against 170 in silver; and in value, at the rate of French money, of 1 fr. in gold against 11 fr. in silver.‡ At the commencement of the nineteenth century, the annual yield of the Peruvian Andes was 251,242 kilogrammes of silver, of which four-sevenths came from the vice-royalty of Peru, and three-sevenths from the mountains depending upon the Government of Buenos Ayres; and of 1500 kilogrammes of gold, of which about 900 should be attributed to Peru, and 600 to the other division of the metallic country. At present Peru, properly so called, yields, according to the statement of the English consul, Mr. Wilson, quoted by Mr. McCulloch, 5,210,000 piastres. In apportioning this yield between the two metals, in the relation which appears to have been that of the commencement of the century—that is to say, one piastre of gold on nine—there will be for the present production 4,631,000 piastres, or 113,156 kilogrammes of silver, and 479,000 piastres, or 708 kilogrammes of gold.§

#### VII. POTOSI.

Among Peruvian mines, those of Potosi merit particular mention. The mines of Potosi are those of the whole world which have yielded the most silver, and which have had the greatest part in the variation in the prices of commodities in Europe. Discovered in 1545, they yielded, 11 years after, in 1556, 89,050 kilogrammes of pure silver, representing 19,700,000 fr. in French money; and 30 years later, according to the most moderate valuation, 184,240 kilogrammes of pure silver, or 40,941,000 fr.—a figure at which they remained, without declining more than a third, for a long period of time. Never had a silver mine given so much, and never has such a thing been seen since. Yet we do not take into account all that got into circulation, without passing by the Mint of Potosi, in smuggling, as lingots, in order to elude the duties established for the profit of the Crown. This M. Humboldt calculates, on the whole of the working, at one-fourth of the declared produce, and, at the period of which we speak, it was yet greater. Thus, the yield of Potosi, at the lowest estimate, was, about 1585, upwards of 50,000,000. To duly appreciate the importance of this, we must recur to the period at which Potosi came to astonish the world. Then the precious metals were extremely rare, and, in consequence, their relative value was much greater than at present. After the prices, compared with corn, silver was worth in Spain more than at present, in the proportion of 62 to 10. These 50,000,000 fr. must then have produced on the minds of the Spaniards the same effect as 300,000,000 would at this day. There was not, perhaps, before the discovery of America, nor for 40 years afterwards, a quantity of pieces of money superior to what Potosi yielded in a single year. Less would have sufficed to give to all Spaniards the passion for mines, and to accredit the fable of the *El Dorado*.

All the treasures drawn from the mines of Potosi, which amount to 6,000,000,000 or 7,000,000,000, have been abstracted from a single mountain, named the *Haton Potoschi* (the Great Potoschi), which for euphony has been christened the *Potosi*. This mountain, situated in the midst of the mountains of Peru, at about 100 leagues, as a bird flies, in the interior of the country, and 4866 metres in height above the ocean, arises, isolated, like a sugar loaf, in the midst of a vast plain, suspended on the brow of the Andes, at such a height above the sea, that the apparent height of the mountain is only 945 metres. There have been worked in different stages 32 veins, which cut the rocky mass, without speaking of smaller metallic veins. It is surrounded for a great distance by a desert country, desolate, without vegetation, without cultivation. There pass few days in the year without snow, hail, or rain, even at the bottom of the plain. An Indian conductor of Lamas, Diego Hualca, who had laboured in the mines of Potosi, which were worked in the time of the Incas, discovered the silver ore in 1545. At the commencement the profits were such, that the population ran from all parts of these melancholy regions, and a town of two

leagues round was constructed, as if by enchantment; it is the town of Potosi, which, at the end of the sixteenth century, was as vast as it is now, and which counted, it is said, as many as 160,000 inhabitants. During the civil wars the population was 7000; but some years ago, after the re-establishment of peace, it had risen to 13,000.

At the beginning, the ore extracted was treated, after the fashion of the Indians, in little furnaces of clayey earth, called *huayras*, in which it was mixed with galena, or lead-ore, the fire being excited by a current of natural air—a large quantity of metal was thus lost. Fuel being obtained with difficulty, wood was replaced with bushes. The richest ores, however, were only taken in hand, and in this mine, even more than in any other worked in the New World, they lay nearest the surface. Quite close to the light of day were found masses of ore, which, it is said, yielded at times one-third of their weight in lingots. The working was carried on with extreme activity. The number of furnaces that were illuminated every evening, on the flanks of the mountain, was at least 6000. It was a wonderful spectacle for new comers, to whom everything appeared fairy-like at Potosi, and the tales of the times speak of it with enthusiasm. The working was about to languish from the want of fuel, when a Spaniard imported to Peru the process of amalgamation, with which Medina had enriched Mexican metallurgy. This was in 1571. From that period the greediness of the adventurers, who, from the Peninsula, precipitated themselves on the New World, could satisfy itself amply, and powerful means were employed to organise labour on a grand scale. By a lucky chance, the salt necessary to the working was found to exist in the neighbourhood. Moving water was wanting to pound the ore, and effect the washing; but this difficulty was got over by bold constructions—barriers in stone were thrown across the mouths of the deep valleys of the Cordillera, in such a manner as to retain the melted snows and the rain; and this water was subsequently released, according to the wants of the moment. In 1578 the number of these reservoirs was at least 18, and had cost, at the lowest calculation, 22,000,000 fr. Fifty years later, the number of these gigantic reservoirs was increased to 32. They were arranged in such a manner as to empty themselves one into the other. The mouths of the mines, with which the mountain was pierced, was not less than 5000. Fifteen thousand Indians, dragged by the *mita* from the pleasant climate of the plain, sought the ores in the entrails of the earth; the same number of free Indians executed the labour of the workshops. Potosi became celebrated throughout both worlds, and even to this day it is the synonyme *par excellence* of riches.

After the first quarter of the seventeenth century, the production of the mines of Potosi began to decline. Still, at the end of the seventeenth century, it amounted to 78,920 kilogrammes, or 700,000 fr. in British money. At this period the contents of the ore diminished in a great degree; it scarcely equalled the Mexican ores of our days; but the mineral matter was still inexhaustible, and that was a compensation. The production underwent a further decline during the first half of the eighteenth century. In 1789 it rose to 89,828 kilogrammes, or 20,000,000 fr. (800,000.) It became a little less during the last decennial period of the eighteenth century; but it declined during the insurrection of the colonies. Potosi, nevertheless, maintained the second rank among the silver mines of Spanish America and the rest of the world, and yielded nearly double of all the mines of Europe together. In 1799 the extraction is legally stated to be only 77,000 kilogrammes. During the first decennial period of the nineteenth century it was 61,000 kilogrammes. During the struggle for Independence, it was at one moment almost nothing. For 15 years it has varied from 18,000 to 22,000 kilogrammes. This is without doubt, little regard being had to the former prolificness of these famous places; but it is still nearly the half of what was yielded by all the mines of Europe at the commencement of the present century.

[To be continued in next week's *Mining Journal*.]

**MONMOUTHSHIRE CANAL COMPANY.**—We have before us a pamphlet, published by Mr. Weale, Holborn, on the present state and future prospects of this company, in the form of a letter, addressed to the committee of management. It will be remembered, by parties interested in this property, that some three or four years since, some very strongly-written letters, by Mr. James Brown, appeared in the *Mining Journal*, reflecting on the management of the company—that gentleman is also the author of the pamphlet under notice, which is written in the best spirit and good feeling, evidently with a desire to render the property as remunerative as possible; for which purpose he has embodied a variety of considerations and suggestions for the future government of the undertaking, and the most economical and advantageous method of carrying out the line of railway from Newport to Pontypool. It contains a series of well-timed recommendations, with the statistical data on which they are founded, and is well worthy the perusal of every shareholder. We shall here make a few extracts, as showing the views of the author, which appear to us to be sound and judicious. His object is to improve the roads already in the possession of the company, and to make the new lines at such a cost, as will enable them, as carriers, to make good dividends on the capital expended, and to afford the reduction of freight dues on the rates allowed by the Act of Parliament. His subject is divided into the following heads:—Uniformity of gauge, tram plates, and edge rails, keying the same, and different forms of rails, concluding with a plan for converting the company's common roads into a railway without hindrance or prejudice to the owners of other existing tram-roads, and to be of the same gauge as the Newport and Pontypool line—viz., 4 ft. 8½ in. There are several railway memorabilia in this essay, which are interesting. The different weights of rails used by different companies varies considerably—for instance, although the generality of the companies employ rails of 75 lbs., and some a little more, those on the Liverpool and Bury line are 85 lbs. per yard; Dublin and Cashel, 90 lbs.; Cheshire Junction, 92 lbs. The total outlay required relaying the old and establishing the common roads as tram-roads, he estimates at 81,934 19s. 4d.; and, although such sum is undoubtedly large, it is shown that a much larger sum is risked in the requisite expenditure for locomotives, waggon, passenger carriages, turntables, and other costs, which, when completed on the old plan, may prove a decided failure—and thus sacrifice double the amount which would be required for placing the company, beyond all doubt, in a successful and profitable position. The carriage of iron and coal to Newport and Cardiff had increased as follows:—Iron to Cardiff, 1836 to 1840, average tons, 128,663—being an increase of 7 1/2 per cent. over 1835. Iron to Newport, 1836 to 1840, average tons, 165,742—being an increase over 1835 of 7 1/2 per cent. Iron to Cardiff, 1842 to 1846, average tons, 188,932—being an increase of upwards of 10 per cent. over 1841. Iron to Newport, 1842 to 1846, average tons, 194,838—being a decrease of 7 1/2 per cent., as compared with 1841. Coal to Cardiff, 1836 to 1840, average tons, 213,538—being an increase of 20 per cent. over 1835. Coal to Newport, 1836 to 1840, average tons, 515,704—being an increase of nearly 5 per cent., as compared with 1835. The railway was opened in 1841, when, from 1842 to 1846, the average was 439,581 tons per annum, or an increase of 79 per cent. over 1841. The pamphlet is well worthy the perusal of the directors, and the suggestions it contains their most serious consideration.

**ELASTIC TUBES FOR ATMOSPHERIC RAILWAYS.**—We last week noticed a suggestion of Mr. A. T. J. Martin, of Penzance, for constructing elastic tubes of vulcanized India-rubber, strengthened by lateral wires, and observed, that we considered not only would it be an infringement on Clarke and Varley's resilient railway, but that the expense and destructibility of the material rendered the idea futile. We readily give insertion to Mr. Martin's reply, which will be found in another column; and also state, in a communication received this week, Mr. Martin suggests two tubes of smaller diameter, laid along the centre, the openings being at the sides—so that the couplers of the pistons project horizontally, and which are fixed to the framework of the carriage. A broad timber rail is laid in the centre, on which flat iron bars are fixed; on these revolve two horizontal guide-wheels, and the wheels of the carriage are without flanges, but made wide enough to allow of lateral deviation. We think the same objection applies to this as to the one under notice in last week's *Journal*.

**THE DIORAMA, REGENT'S PARK.**—We had an opportunity of visiting this establishment, on Wednesday, to view the new pictures with which the season opens on Monday—one represents the interior of St. Mark's, Venice, painted by Mr. Dossé, from original sketches by M. Renoux; the other is a view of Tivoli, near Rome, painted by M. Bonton. They are both paintings of great merit; and the production of beautiful effects, by light and shade, is managed with consummate skill—indeed, the night service in St. Mark's, with the illuminated cross, the numerous congregation, and organ accompaniment, is one of the most beautiful representations we ever recollect seeing.

\* These modifications concern Potosi, and will be detailed hereafter.

† Edition, 1846—article, *Precious Metals*.

‡ It, instead of the version given by the Prefect of the Department of Potosi, that which was communicated to M. de Humboldt he adopted, there must be added to the figures concerning silver 270,000,000 piastres, which will make the total production of the Peruvian Andes 2,887,900,000 piastres, of which 9,650,000,000 in silver, and 228,000,000 in gold; or, in weight to 64,980,000 kilogrammes of silver, and 337,725 kilogrammes of gold; or, in weight to 16,003,000,000 fr., of which 14,440,000,000 in silver, and 1,163,000,000 in gold.

§ The production of gold appears to have been at certain periods very considerable at Potosi. Thus, from 1774 to 1775, there were delivered at the Mint of Lima 6,102,139 marks of silver, and 129,000 marks of gold, which must have produced 1 piastre of gold against 8 piastres of silver. From 1772 to 1791 the production of gold was much less; but nevertheless, upwards of 1 piastre of gold was against 8 of silver, without counting the proportion, relatively greater of gold, which was not sent to the Mint.

#### Original Correspondence.

##### HYPOTHESES ON IRON.

Sir,—I should have replied to "Ferreus" last week, but I was engaged in completing some experiments, which are calculated to throw a new light on our argument. The experiments I allude to have fully proved, that not only can hematite be deoxidized in the reduction of iron, &c., but lime, alumina, baryta, strontia, and magnesia, can also be deoxidized, or metallized; for, in many of the samples of iron I have examined, I find either one or more of the bases of the above earths—that is to say, in case iron I find calcium, aluminum, barium, strontium, and magnesia—fully proving that clay and lime, together with any other earthy matter of a like kind, is deoxidized. Nor must this be considered as so very surprising, when we reflect, that the most oxidizable metal we know—viz., potassium—can be produced from its oxide potash, by the action of iron at an intense heat—so that the reduction of the earthy metals I have already enumerated, can be very readily explained; moreover, none of the metals, as aluminum, &c., are near so oxidizable as potassium—so that their reduction can be more readily explained. The reduction of potash to the metallic state, is not a mere theoretical notion; for, some years since, all the potassium required by chemists, was manufactured by passing hydrated potash over intensely-ignited iron turnings, when hydrogen gas and potassium came over, and oxide of iron remained. I must here make a remark on a portion of Mr. Musset's communication of last week (22d inst.) He there states, that the protoxide of calcium (lime) deoxidizes the sesquioxide of aluminum (alumina), forming protoxide of aluminum, and peroxide of calcium. Now, such a compound as the protoxide of aluminum is not known to exist, according to the best authorities; the only known oxide of aluminum is the sesquioxide, commonly known as alumina, having the composition, aluminum two equivalents, oxygen three equivalents; and the peroxide of calcium is also a very uncertain compound, having been only formed by its discoverer, Thenard. Its nature, as also its composition, and even its existence, is very doubtful. In all the slags I have yet examined, or the analyses of which I have seen, the alumina and lime generally exist as silicates of lime and alumina. I have never before heard it stated, or even understood it to have been believed; that the calcium and aluminum existed as peroxide and protoxide; neither do I think it probable, there being no experimental proof to support such a proposition.

To return to my reply to "Ferreus" who states that we have no evidence—or, if we have, it is of a contrary character—that iron and carbon unite in certain, fixed, and definite proportions. This I must deny; we have abundant evidence of fixed and definite carbures of iron. Berzelius describes two such compounds; one containing one equivalent of iron = 28, and two equivalents of carbon = 12; the other two equivalents of iron = 56, and three equivalents of carbon = 18. If, however, "Ferreus" means that ordinary cast-iron is not a chemical and definite compound of iron and carbon, then I must agree with him, for it certainly is not—that is, as far as our experience carries us. White iron is, however, a mixture of a definite carbure of iron, with an ever-changing quantity of iron, destitute of carbon; and grey iron is a mixture of a definite carbure of iron, with an also ever-changing amount of iron, free from carbon, to which must be added a varying amount of graphite, which, however, exists as such in the grey iron, and does not chemically combine either with the iron, or with the admixed chemically definite carbure of that metal. The general results of Karsten I do not consider unsatisfactory, and fully agree with him, that white iron does contain more carbon than grey iron; the only difference being, that in white iron the whole of it is in a state of chemical union—whereas in grey iron, a portion only is in that state, whilst the remainder is a mere mechanical mixture.

I presume that "Ferreus" found his opinion on the amounts of carbon in grey and white iron, from the fact, that it is more difficult to burn off the carbon from the former, than from the latter variety. This, however, is no proof whatever, even supposing that accurate analysis had not proved to the contrary. Analysis clearly proves, that grey contains less carbon than white cast-iron. This may be taken as a general rule. The reason of its appearing less in practice is, that graphite is exceedingly difficult to oxidize, even under the influence of a very high temperature, and free exposure to the atmospheric oxygen: again, it is comparatively to the combined carbon of the white iron in large masses; hence, it does not expose such an extended surface to an oxidizing agency, and, hence, cannot burn off so rapidly. Moreover, it has not the advantage of existing chemically combined; and having another force, besides the oxidizing agency of the atmosphere, to effect its conversion into carbonic acid—viz., the simultaneous partial oxidation of its combined iron; for it is well known, that most chemical decompositions are effected more readily when two forces are called at once into play; for instance, silica, at a red heat, cannot, by itself, be decomposed by chlorine—but, as soon as charcoal is mixed with it, decomposition takes place by virtue of the affinity of the charcoal for oxygen; which it can only obtain from the silica, which has then its bond of union with its oxygen so materially diminished, that the chlorine has sufficient affinity to overcome it; and, the consequences are, the formation of chloride of silica, and the oxidation of the carbon. There is no doubt whatever of the presence of phosphorus in cast-iron; I have found it in every sample I have yet examined, and, in some samples, in considerable quantity. "Ferreus" must not imagine, that Karsten meant that all grey or white irons had the compositions as assigned by the analyses I quoted, or that I gave them as analyses suitable for each class of metal; they were merely copied from amongst a number of others, to fully prove that grey cast-iron did contain uncombined carbon, and that white cast-iron did not, and to show that sulphur, phosphorus, &c., did exist in cast-iron.

I do not believe it possible to give any general formula for any class of iron, or the composition of any particular sample—as the carbon, manganese, sulphur, phosphorus, &c., must depend entirely on the nature of the ore, the limestone, and the coal, as well as the temperature of the furnace, the force of the blast, and, besides all these, accidental changes in the temperature and pressure of the atmosphere, &c. Mr. Musset states, that graphite is a compound of carbon and iron; it is, however, in its pure state, carbon, unmixed with any other body whatever; its usual impurity is iron. I may here mention, that any remarks, well-authenticated, specimens of metal, together with the ore, coal, and limestone used, in its formation, as well as its slag, and the locality, and, if possible, bar-iron made from the sample, which may be forwarded (free), will be esteemed a great favour, as an investigation of the magnitude which I have commenced, cannot be completed, unless I have the kind assistance of those most interested in the results of my experiments, and of those who are more happily situated than myself in obtaining samples of all kinds, together with local and practical information.

JOHN MITCHELL.



height, requiring an enormous power of blast to force through such a heavy mass of materials. I suspect this has arisen from a mistaken notion. In passing through the furnace, the air of the blast becomes charged with carbon, and the gases, thus formed, ignite and show flame when they meet oxygen at the top of the furnace. This flame has been regarded as part of the enormous flame passing through the whole height of the furnace, and is considered a waste of heat—to apply it, the furnace has been raised. Still, flame appeared, and the next furnace raised still higher; I should say from 30 ft. to 30 ft. is high enough for any furnace. I consider the grand desideratum now required to be effected, for insuring the regular working of furnaces, is, some means of diffusing more generally and uniformly the gaseous action through the entire mass of materials above the point of ignition. When small streams of air are driven in at different points with great pressure, it seems likely that they will form small channels wherever they meet least resistance, acting there with full effect, but leaving masses at the sides unaffected; and these masses, occasionally slipping down, cause the derangement in the working to which furnaces are so liable. If a system of working furnaces by exhaustion could be rendered practicable, it would be found most advantageous in many respects. The chief difficulty appears to be, in concentrating the heat sufficiently in the heart of the furnace. I am inclined to think that the combination of the blast with exhaustion, and a certain modification of the form of the furnace, would be attended with advantages sufficient to repay the extra expense. By the adoption of such a plan, all the combustible gases produced in the furnace, and now generally wasted, could be used for generating steam, heating the blast, calcining the ore, or other purposes. I am aware that, in many works, these gases are used for heating the blast pipes. Another desideratum in smelting iron is, to render the action of sulphur harmless. This is one of the most general impurities of coal, and its separation is difficult; coking coal does not effect its separation. The union of sulphur and iron as pyrites—the state in which it exists in coal—may be overcome by air and moderate heat, the sulphur then burning, and the iron becoming oxidised; but it resists the action of high heats. The application of air to the upper part of a furnace would not have this effect—the heat would rise too high. The application of steam will be most effective; and I strongly recommend this to the attention of parties commencing to build furnaces for smelting iron. By diffusing steam through the materials in the upper part of the furnace—say, half-way up—sulphur will be disengaged in a harmless state, the reduction of the oxide greatly assisted, the materials kept more open, and the gaseous action rendered more general and uniform.—SCRUTATOR: March 30.

#### HYPOTHESES ON IRON.

SIR.—I persevere, in Mr. R. Mushet's letter, no reply to my facts. It is a repetition of old assertions, not only without proof, but against it: and these followed by attempts at reasoning on vapours, &c., which defy parallel for contradiction and confusion. The slight of hand by which epithets heretofore applied to ironmasters are shifted to the iron, converting it to a moral agent guilty of its own "crude, unfinished inferiority," is a new feature. The chimera which Mr. Mushet may fight, or praise, just as he pleases, is his own; like the rest of your correspondents, he can neither confer praise, nor blame, in a matter of which he is ignorant.

March 29.

FERREUS.

SIR.—Allow me, through your valuable Journal, to ask of Mr. Brunton, if his ore-dressing frame has been tried with the improved mode adopted at Wheal Vor, St. Agnes Consols, and other mines, for dressing tin ores, within the last three years; and, if tried, what the saving in the erections, labour, &c.?—ENQUIRER: Redruth, March 29.

#### DIRECT-ACTION REVERSING WATER-WHEEL.

SIR.—In reply to the letter of "W. W. B." in your last week's Journal, I beg to inform you, that I do not put forth my reversing water-wheel as a new invention (whether it may be so or not), but as a modification of existing hydraulic machines—my object being, to introduce in the works of the Coombe Valley Quarry, as its acting manager, such machinery as may save the greatest amount of labour, with the least possible cost of construction. The capital of this company is, as every one knows who reads your useful Journal, a very limited one; and it requires great care and perseverance on my part to fulfil the pledge I have made them—viz., that the undertaking shall return a net profit of 20 per cent. on the working capital. The proprietors are mostly builders—persons who have, for a long time, felt the great inconvenience of the present existing monopoly in the slate trade; and who, also, as practical men, well know the theory of cost and produce: it is to those, therefore, that I have submitted the various plans for working their quarry; and the result of which is, I am happy to say, a perfect confidence in my views. I am in hopes of getting the quarry in working order in about six weeks; and, in the mean time, shall be happy to give every information on the subject to any person, whether in this, or any other company, who will call on me at my office. It is my intention of publishing, with your assistance, a series of papers in the *Mining Journal*, from time to time, on slate and the slate trade, illustrated by detail drawings, and founded on the experience of some years, in the building, and other constructive departments of my profession.

C. S. RICHARDSON, Surveyor and Civil Engineer.

Whitefriars-street, City.

#### MR. GIBBONS ON VENTILATION.

SIR.—In reference to the facts on ventilation in Staffordshire, advanced by "W." and Mr. Gibbons, and which "V." has exposed himself by affecting to disbelieve, I should like the inquiry made, if there be greater facility of ventilation in the thick than in the thin seams. As a given area of a coal, 10 yards in height, must give out five times the quantity of light air afforded by a coal which is only two, it may, perhaps, be owing to this that ventilation, though precarious, can be conducted in Staffordshire with a more downcast and upcast, devoid of artificial aids. A comparison of the effects in different strata would ascertain the question. I am happy to hear my hasty idea of steam as an auxiliary, has been previously sanctioned by a proposer of Mr. Gurney's experience. I shall take the first opportunity of examining his plans—for "V.'s" opinions on them are contradictory; nor does my letter furnish the least indication of any particular way of applying the steam. So far as I can gather from "V.'s" paragraph, Mr. Gurney contemplates using steam by pressure, and not by condensation. I am surprised that a person who moves heavy bodies with such ease, should be in any difficulty how hydrogen gas floats down a current of air. It seems this river, which hurls rocks, is unable to support thistle down. That the incline carrying the current back from the extreme rise of the workings may be increased so much, that the ascensive power of the gas shall afford a great obstacle to the other current ascending to the turning point, is obvious, and, if the rise is very steep, will neutralise it; but there is then a simple remedy, which I leave to "V.'s" natural ingenuity. In Mr. Gibbons's book, of which I do not believe "V." has read one word, except what he has found in the quotations, the difficulties of this description, *in such a colliery as he describes*, are specially provided for. The simile offered by "V." on carbonic acid gas, I comprehend, and also its absurdity. If he believes the parallel holds betwixt a mixture of fluids and the eccentricities of a tornado, let him take—atmosphere being 1,000—the specific gravity of a hay-stack, a house, an uprooted tree, a great gun, and a sentinel; if he find a difficulty, ask the aid of M. Pratiue; if both are baffled, let them wend their way—the Valentine and Orson of ventilation—to the Durham College; and, if Nature still refuse "to be asked questions," a little of that study of pneumatics recommended to "F. B." may enable them to identify houses, guns, sentinels, and hay-stacks, with the spherical particles of fluids, pressing equally in every direction. "V." perhaps, is already aware the air we breathe is a mixture of fluids of two specific gravities.

On the 27th of February, I indicated the absurdity, or unfairness, of supposing air, which entered a mine at 80°, would pass through it of the same temperature as if it entered at 40°. Since then, "V." has raised the summer heat to 100°, which is very hot indeed; and "F. B." justly shows that a chimney exposed to that temperature would, instead of containing air at 62°, become a powerful auxiliary. Against this, "V." advances an extraordinary notion, that solid substances absorb less heat than air. Let "V." next summer, while he fane one cheek with a cool zephyr, at the temperature of 100°, apply the other to the brickwork of the chimney heated by the rays of the same sun, and acquaint us if he can face that argument? "V." has put a question respecting gas in "X.'s" mine, which he would have avoided had he attentively read that letter. I congratulate "V." on his domestic comforts in keeping the door clear, and providing a channel of ingress and egress through the chimney for himself, his provisions, and friends; but this letter of the alphabet has announced its intention of departing from us. I, at one time, thought "V." was fluent him-

self, from the strong evidence by which he identified "W." and Mr. Gibbons, but it was not so; and, at last, "V." has been resolved into the initial of a vanishing quantity.—DAVID MUSHET, Jun.: Gloucester, March 30.

#### DR. CLANNY'S IMPROVED SAFETY LAMP.

SIR.—Agreeable to promise, I send you as correct a list (as I can obtain from different quarters) of the collieries in which my improved safety lamps have been called into use; I give the names as they stand upon my list, without referring to counties:—Willington, Walker, Wall's End, Sedghill, Goathurst, Coxbridge, Heaton, Patricroft, Monkwearmouth, Thornley, Wigton, Belmont, Jarrold, South Penrith, Pelton, Oxclose, Rhymney, Mostyn, Coalbrookdale, Risca, Broadsfield, Newcastle-under-Lyme, South Moor Colliery, Shield Row, Holmside, Crayhead, and Barnhope—in all 27 collieries. One manufacturer of my safety lamps, informed me that to order he had sent 24 safety lamps to London; and another manufacturer, that he had executed eight dozen of my safety lamps for different parts of the kingdom. I expect ere long from the manufacturers correct information as to the extensive use of my improved safety lamps, to give additional numbers, and of which I promise you as early an account as I can obtain. Sunderland, March 29.

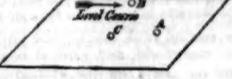
W. REID CLANNY.

#### IMPROVEMENTS IN WORKING COLLIERIES.

SIR.—Amongst the many causes deteriorating the air in mines, is smoke—smoke from oil lamps, and smoke from gunpowder; and I am convinced much relief would be given to many mines if the smoke from these two sources could be stopped. I had a lamp put into my hand the other day for burning tallow, which gives very little smoke, instead of oil, and which has done a great deal of good in the collieries about Edinburgh; it is the invention of an intelligent "overman" in the Marquis of Lothian's collieries, near Edinburgh, whose name I do not know. Gun-cotton, which is said to give no smoke, could be substituted for gunpowder—and thus much smoke, which is so hurtful to air, might be got rid of. Could you, or any of your correspondents, inform me where, and at what rate, gun-cotton is to be had?—R. M.: Glasgow, March 30.

#### VENTILATION OF COLLIERIES.

SIR.—Although so much has appeared in your valuable columns, under the above head, from "V.", "W.", "F. B.", T. Deakin, &c., &c., I hope I may be allowed to say a few words. I believe yourself, and many of your readers, will agree with me, that if these correspondents would cawless, and stick more to the subject they would wish to benefit, it would be better. The efficient and safe ventilation of a colliery, *however fiery it may be*, can be effected by carrying out the following simple plan, which I will endeavour briefly to describe. I will suppose a piece of coal required to be worked—say a mile by three-quarters of a mile—the following rough sketch may render my description more clear:



Let A be the supposed site for the working pit, or shaft; I would have only one pit for winding the coal, not two, as is the general practice, on the most suitable point, near the centre of the piece of coal, but at the very extreme rise. I would sink another shaft B, 1 ft. in diameter, larger than the working shaft A: to the dip of B and A considerably, I would sink another shaft C, of the same dimensions as the shaft A, and so situated in the piece of coal, that when the coal is got around the shaft A, and the hauling becomes expensive, the shaft C may be used as the winding shaft. On the top of shaft B, I would build a chimney 40 ft. high, the same in diameter as the shaft; and at the bottom of shaft B, have a well-constructed furnace always kept at work. Get a well-constructed air-road, not less in area than the downcast shaft C, carried from this downcast shaft C, through all the workings of the colliery, to the bottom of the upcast shaft B; carry the air in a *body*, do not split it. Carry the air-roads at the top of the coal, or as near the top of it as practicable, taking care that the air-roads is fully in area equal to the downcast shaft C; never let it be throttled, moreover mischief arises from this than is imagined.

You will see that the working shaft has nothing to do with the ventilation—I condemn this universal practice, *in toto*. If these ill-described plans are carried out—I care not how fiery the colliery—I fearlessly assert, that we shall have no more sad tales of hundreds of our poor colliers being hurried so fearfully to their last account. Many will say that my plan is too expensive—I grant it may be more expensive than most of the slovenly plans adopted, but then it *will be effective*; and I think all your readers will agree, that no man has a right to work a colliery, who, to save his gold, will knowingly risk the life of his fellow-man. I have not time to write more on this subject now; and, in conclusion, beg the opinion of Mr. Deakin, and other practical miners, upon what I have stated. I claim no originality—nothing new or wonderful—but I beg attention, from those capable of giving an opinion, to what I have, perhaps, imperfectly described.

March 31.

ALPHA.

#### THE DRAINAGE OF COAL SEAMS.

SIR.—The remarks of "V." on the disengagement of gas in opening new collieries, recalls the views of Mr. Ryan, who I believe first explained fully the theory of these and other facts in mines. There is no question, had Mr. Ryan been a coalowner, he would have effected much good; but he had the discouraging task of engraving acute and refined views upon the wild stocks of practised prejudices—a disadvantage which nips the buds of an expansive mind, and blights the quality of its fruit. As confirmatory of his opinions on the effect of *faults* in detaining the products of fermentation, and enriching the quality of the coal, it is to be remarked that, in the small coal-field of the Forest of Dean, where there are no dykes or dislocations to impede the continuity of the strata, the mines have no inflammable air, which appears entirely drained off, according to his theory, and the coal correspondently of a poor quality, compared to the produce of districts where faults abound.—D. MUSHET, Jun.: Gloucester, March 29.

#### VENTILATION OF MINES.

SIR.—In my last letter, I mentioned two facts in the ventilation of my colliery, and in answer to "V."—I depend on fire in the 30 fathoms and 15 fm. pits in hot dry weather, as the ventilation will not move without it; but I would call his attention, also "W." of Dudley, and particularly Mr. Gibbons's, to the following extract of a work published by Dr. Ure, in 1839, giving a short description of coal mines; and, speaking of the large collieries at Newcastle, he says:—"Here the circulation is made active, by rarefying the air at the upcast shaft by means of a very large furnace, placed either at the bottom or *top* of the shaft—the former position is generally preferred; when it surmounts a single pit, or a single division of the pit, the compartment is made air-tight at top, by placing strong buntions or beams across at a suitable distance from the mouth; on these buntions a close scaffolding of plank is laid, well plastered or mortared over with adhesive chy. A little way below the scaffold a passage is previously cut either in a sloping direction, to connect the current of air with the furnace; if any obstacle prevent the scaffold from being erected within the pit, this can be made air-tight at top, and a brick flue carried thence along the surface to the furnace; the furnace has a size proportioned to the magnitude of the ventilation, and the chimneys are either round or square, being from 50 to 100 ft. high, with an inside diameter of from 5 to 8 ft., tapering upwards to a diameter of from 2½ ft. to 5 ft.; such stalks are made 5 in. thick in the body of the building, at bottom they are lined with fire-bricks. The plan of placing the furnace at the *bottom* of the pit, is, however, more advantageous; because the shaft through which the air ascends to the furnace at the pit mouth, is always at the ordinary temperature—so that, whenever the top furnace is neglected, the circulation of the air becomes languid and dangerous to the workmen; whereas, when the furnace is situated at the bottom of the shaft, its sides get heated, like those of a chimney, through its total length—so that, though the heat of the furnace be accidentally allowed to decline, or become extinct for a little time, the circulation will still go on, the air in the upcast pit being rarefied by the heat remaining in the sides of the shaft." Your readers will also find the air chimney, with furnace either at top or bottom, described in the *Edinburgh Encyclopedia*, published in 1830. As I have stated, Mr. Gibbons is right, in putting on a chimney on the upcast; for every means should be used to make the air take its *natural course* to there; if the current does so *invariably* without a chimney, I agree with "V." so far, in thinking it of very little additional service—for without a furnace in the bottom, I very much doubt of its safety alone. From the above extract, Mr. Gibbons must eat a sorry figure before your readers, in making claim to this method of ventilating mines; and your readers will also doubt if Mr. Moses

Taylor is going to be the "intelligent and indefatigable surveyor," to lead us through this Red Sea, as it was his place to have let Mr. G. know what had been before done by others. I regret much that Mr. T. Deakin has not put to the test his way of it—viz.: a fire at the bottom and top of shaft—and given the result; we have not forgot his notable method of purifying the atmosphere, laid before your readers some time ago. I hope Dr. Murray will continue his interesting geological papers—these are worthy of him; but to push forward hurried thoughts or remarks on ventilation, suggested by some imperfect opinion, without the practical trial of it, cannot increase his authority in these matters; to both these gentlemen, I would recommend the adage—"Ego scis studium sine divite rea, nec rude quid proposit video ingenium."—X.: Carlisle, March 29.

#### VENTILATION OF MINES.

SIR.—I have looked on in silence for months past, expecting that some of your talented correspondents, who have all the appearance of being burning and shining lights, would, ere this time, have laid before the coal-owners and the public some tangible scheme of ventilation, or improved method, bearing the stamp of originality, for working our coal mines; but I have hitherto looked in vain. The object of one class of your correspondents seems to be, to labour to establish learned theories, and that of the other class to uproot and destroy them. Thus, between argument and refutation, the writers have apparently lost sight of their philanthropic object; and, while this war of words is going on, carburetted hydrogen gas is mowing down its victims, not by tens, but by fifties.

Being practically acquainted with the working of coal mines, and being anxious to improve the condition of a worthy class of men, I have, for a long time past, made the subject of ventilation, and an improved method of working coal mines, my particular study. By your permission, I will give the results to the public:—

1. I have invented a machine for working coals, by which I can work the hardest coal *without the use of gunpowder*, and by which I expect to banish every naked light from the mine, by enabling the miner to work with a safety lamp; I also calculate upon saving 15 or 18 out of the 20 per cent., now nearly lost in "small," by the present barbarous mode of "kiving," "nicking," &c.; and independent of the advantages to the pitman, I calculate that coal will be worked about 40 per cent. cheaper than at present. By working the coals by this machinery, the operations will be confined to a less area, the ventilating current can be more easily concentrated, and thereby rendered more effective. I have taken preliminary steps towards securing this invention by letters patent; but I wish to obtain the assistance of an influential party, connected with the coal-trade, to enable me to introduce it into the coal mines on a scale commensurate with its merits; and should the notice attract the attention of such a party, I shall be happy to treat with them on upon equitable terms.

2. Those of your readers who have paid any attention to the cause of explosions in coal mines, which may be scantly gleaned from the evidence given before coroners' juries, and from incidental facts which occur occasionally, must at once conclude there is something "rotten" in the system. After attentively reading and weighing everything that has come in my way, bearing on this important subject, for years past, I have, some time since, come to the conclusion, that there is but one course by which the cause can be removed—and that is, to *fix and lock every light in the pit*, and to allow neither man nor boy to have the least control over them, except a man or men, especially appointed for that purpose. Would the owner of a powder magazine allow a man to enter it with a naked candle, without using some other precaution than merely warning the man as to the insidious nature and destructive power of the powder? You may warn a man of danger, and caution him not to approach it; but the most effective way to prevent him doing mischief is, to put it out of his power. It is not my intention to occupy your space by going much into detail in the mode of fixing these lights in the mines; but shall gladly afford every information in my power to any owner of collieries, who may apply to me for that purpose. The general principle which I would adopt is, to *fix and lock up all the lights in frames, or posts for that purpose, in the horse-roads, &c., so as to give out the greatest amount of light to the best advantage*; these lights should be inclosed in lamps or lanterns. A man, or men, should be appointed to have the entire control and management of these lamps or lanterns, and on whom the whole responsibility would rest.

It must be matter of surprise, as well as regret, that, notwithstanding the rapid progress of the arts and sciences during the last half century, the mode of working our coal mines has alone remained nearly stationary; and from what I have seen in old pits' workings, I am inclined to think that the pitmen in the last generation were actually more expert in working coal, than those of the present day, considering the limited resources they possessed in regard to steam-engines, &c. If any one doubted this fact, let him read the account of an accident recorded in your Journal of the 27th inst., which took place at the Yew-Tre Colliery, Kingwinford, where, in the year 1847, seven boys were sent down the pit early in the morning to *BRUSH OUT THE SULPHUR*! Let this be written as with a sunbeam. Need explosions of fire-damp excite surprise after this? Surely, Mr. Editor, this is an unmistakable sign of rottenness in the system. In what light are we to consider the melancholy accident recorded last week, by explosion of fire-damp, in one of Mr. B. Gibbons's pits? It would be too much to say, without a full knowledge of the facts of the case, that it certainly is to be considered conclusive evidence against his system, but it certainly has a tendency to throw doubt upon it. We cannot blink the fact, that since the introduction of safety lamps into our coal mines, the loss of life by explosion of fire-damp has been fearfully on the increase—but I am persuaded, that, if a system of *fixing up the lights, and locking them from the men*, had been adopted 20 years ago, some hundreds of valuable lives might have been saved, and consequent misery and distress prevented, independent of the vast sums of money these accidents cost the coalowners. Should any of the coalowners entertain the idea of testing my system of fixing the lights, &c., and still have doubts about the matter, I would advise a few of them—say, six or eight—to form themselves into a kind of club, or society, and each man contribute a small sum of money to a general fund, with which to try my system experimentally, by first having only one of their collieries fitted up, in that way; then, they might, for little expense, put it to a practical test; and, in the event of it turning out well (of which I have no doubt), each owner could have his colliery fitted up in rotation. I have little doubt but *several collieries* might be fitted with fixed lights, and so placed in comparative safety, for less money than one explosion would cost, not to speak of the loss of life, &c. Now, Mr. Editor, I have not only struck out a new path, but, I consider, a safe one too; and also an easy and inexpensive method of putting it to a practical test, which I trust some of the coalowners will show their superior sense in adopting; and should any of them require my assistance in carrying out these plans, I shall do all in my power to meet their wishes.

Bensham, Gateshead, Tyne, March 30.

WILLIAM STORME.

#### MINE SURVEYING—ERRATUM.

SIR.—In my letter, inserted in your Journal of the 27th inst., there is an error, which I should feel obliged by your correcting:—"80 yards" should be "60 yards"—INVESTIGATOR: St. Agnes, near Truro, March 30.

## CANAL SHARES.

Sir.—Your comparative prices, in Saturday's paper, of canal shares, may be generally accurate, for might I know—but you have been sadly misled, as to the present price of Somerset Coal Canal, which you quoted at 130*l.* Within these few months, by auction, some fetched only 92*l.* per share; and, within these 14 days, have been sold at 85*l.* by private sale.

MARCH 30.

A PROPRIETOR.

## Proceedings of Public Companies.

## MEETINGS DURING THE ENSUING WEEK.

MONDAY . . . . . Great Wheal Martin Mining Company—office, at One. Great Wheal Williams Mining Company—Plymouth, at Twelve. TUESDAY . . . . . West Wheal Maria Mining Company—Bedford Hotel, Tavistock, Twelve. Barossa Range Mining Company—offices, at Twelve. WEDNESDAY . . . . . East Coombe Mining Company—Fortescue Arms Hotel, Barnstaple, Two. English Copper Miners' Company—offices, at Twelve. THURSDAY . . . . . Coombe Valley Slate Company—offices, at One. Royal Mail Steam-Packet Company—London Tavern, at One.

[The meetings of Mining Companies are inserted among the Mining Intelligence.]

## VAN DIEMEN'S LAND COMPANY.

The annual meeting of this company was held at the office, Great Winchester-street, London, on Tuesday, the 20th March.

JOHN CATTLEY, Esq., in the chair.

Mr. HOWELL (the secretary) read the minutes of the former meeting, and the report of the directors, from which we make the following extracts:

The Government survey of the company's lands has been completed; and the Lieutenant-Governor of Van Diemen's Land is about to forward to the Secretary of State the tracings and descriptions of those lands, with a view to the grant of the requisite warrants by His Majesty's Government; and the directors are now enabled to state, that the said documents have been received, and that Earl Grey has signified the intention of Government to carry out this arrangement fully, in pursuance of the company's charter. Steps have been accordingly taken for preparing and submitting a bill for the sanction of the grant by Parliament; and the directors trust, that an act to empower Her Majesty to convey the lands in question to the company, will be obtained in the present session of Parliament. The proprietors will be gratified at learning, that the lands thus awarded to the company, by an agreement between the Lieutenant-Governor of Van Diemen's Land and the company's chief agent, as shown by the tracings and descriptions transmitted to Earl Grey, consist as follows—viz.: Circular Head, 20,000; Surrey Hills, 150,000; Hampshire Hills, 10,000; Middlesex Plains, 10,000; Ems Bay, 50,000; Woolnorth, 100,000; Robbin's Island, 24,450; Walker's Island, 1720; and Trefol Island, 250—making a total of 366,425 acres. Valuable as these extensive grants must ultimately prove, yet the directors regret to add, that the expectation which they had entertained of their becoming so at a very early period, has been frustrated by Sir Eardley Whilton's announcement to Mr. Gibson, that in consequence of the Government surveyor's unfavourable report of the line of road previously laid down between the settled districts and Ems Bay, the Government gang had been withdrawn to another quarter of the island. The result, however, of an interview with the present Lieutenant-Governor, before his departure from England, leaves the directors to believe, that the project of establishing such a road will be resumed; and this expectation is further confirmed by the accounts of the improving state of the commercial, agricultural, and financial interest of the colony; as to the unprecedent depression of those interests, and the consequent want of funds for public works, rather than the difficulties of the line of road, its abandonment may probably be attributable. The proprietors are aware, that the chief inducement held out to settlers to take farms on the company's heavily-timbered lands, was an engagement to take its produce at certain prices. That engagement was entered into just before the commencement of the pecuniary embarrassments and stagnation of all enterprise throughout the island, and the results have been very disadvantageous to company, as the produce delivered into store by their tenants was hardly saleable at any price. The loss, however, has not been so heavy as might have been at first supposed, because, in the earlier years of occupation, the clearance and cultivation of land proceeded but slowly; and the tenants, therefore, instead of being creditors, became largely indebted to the company for indispensable advances of provisions and stores. Those advances at one time reached 20,257*l.* 5*s.* 5*d.*, and from the tenor of the latest advice, it would appear that they still exceed 10,000*l.*; but the increase in the tenant population, and the rapid clearance of land (amounting altogether to 1640 acres under the plough), leads to the belief, that a great part of this debt will be liquidated in the course of the years 1847 and 1848; so great, in fact, is the progress of cultivation, that the directors would regard with some degree of alarm the prospective success of their tenants, were it not that the improvements in the markets of Australia hold out the expectation of remunerative prices for produce delivered to the company. Should these prices be maintained (as may not unreasonably be assumed) for the next three years, there will be no further loss to the company from over production by their tenants, as in March 1830, their leases, and with them all the company's engagements, will terminate. The sales of cattle and sheep have been inconsiderable, and at very low rates, and the horses disposed of were few, and notched small sums; the exact amount cannot be accurately known, as, from some unaccountable delay, no account books have yet been received. On the other hand, the sales of live stock for the tenants' subsistence have been very large. The company's clip of wool for 1845, consisting of 74 bales, realized, at public auction, 1075*l.* 19*s.* 1*d.* In the course of the eight months from the 5th of Jan. to the 5th of Sept., last, 25 vessels had arrived, and 31 departed from Circular Head, to foreign ports, besides numerous coasters sailing between Stanley, Ems Bay, and Launceston; and that the traffic was progressively improving. What provision has thus been made to advance the commercial interests of the new societies growing up at Stanley and Ems Bay? Particular attention has likewise been paid to their moral and religious improvement, and the directors have great pleasure in stating, that as far back as March, 1846, the captain (Mr. Grigg) had secured the services of a respectable and well-qualified schoolmaster, and also a mistress, for the schools at Stanley. A master and mistress had likewise been obtained for schools at Ems Bay, whose buildings for the purpose were in course of erection, at the cost of the tenants; and Mr. Grigg states his sanguine expectation, that both places will shortly possess as many social advantages, and qualify as fair a social character, as any amount of population in any rural district of England.

The CHAIRMAN said, the directors had endeavoured to state in that report every thing that was likely to interest the proprietors, and all that came within their knowledge, which they had done as candidly and fairly as they could; so that it would leave him but little to say—indeed, the less he said the better, as that was the result of all their deliberations. Their chief agent had now instructions to reduce, as far as possible, the working expenses of this establishment, and so to alter the terms of tenancy, that the company might ultimately become landlords, and not farmers. (Hear, hear.) He might, on the whole, say that their people were increasing, and, as far as could be expected, the cultivation was increasing. Their tenants were all poor men at the beginning, but by industry, had become prosperous; and it was gratifying to him and the directors to be able to state, that any well-conducted man going to their establishment, would have the power of doing well for himself and family—so much so, that they hardly knew of an instance of a man not succeeding. Those who had succeeded had done so to a far greater extent than they could have done in this densely-peopled country. There was nothing else that he knew of, but he should be happy to answer any question in his power; and with these observations, he would move that the report, now read be adopted, and circulated amongst the proprietors.

A PROPRIETOR asked, if the tenants had increased.

The SECRETARY said, the population had increased, but there had been no fresh tenants in the year. There had been an increase of 52 labourers.

The CHAIRMAN said, they could not effect an alteration till 1850. He did not consider there would be any great loss this year from their system of taking produce. As to potatoes, they had agreed to take them at 5*s.* per ton, and Mr. Gibson had been selling them at 5*s.* 1*d.*; then as to corn, that was taken at 7*s.* a bushel, and had been selling at 7*s.* 6*d.* per bushel.

Mr. MARSH observed, that, since 1840, they had taken from them at least 70,000*l.*—was that system to be looked upon as finished?

The CHAIRMAN said, they were induced to offer the first 30 tenants the advantage of taking their produce at fixed prices; but experience had now proved the expense and inaccuracy of continuing it any longer. He hoped, by this change, now proposed in the tenancy system, there would be a return for their capital in the shape of rental, or by the sale of their lands, as times improved.

The SECRETARY, at the request of the chairman, read the last resolution, passed at the court of directors on the 18th March, 1847, in respect to the chief agent, Mr. Gibson, giving his attention to the reduction of expenditure, and the change of the system in regard to the tenants.

The CHAIRMAN assured the meeting that this resolution underwent a deal of consideration before it went out, and his only fear was, that they had gone too far, if anything, by this resolution; but Mr. Gibson would feel it his duty to see it enforced, and he hoped the consequence would be, that they would get a small dividend. (Hear, hear.)

The following gentlemen were elected directors of the company—namely: W. H. Browne, Capel Cure, Thomas Harrison, Robert Holme, John Pearce, G. Rongomont, F. F. Rongomont, T. W. Cattley, and J. G. Cattley, Esq.; and James Baber, C. R. Lucas, and W. Wilkinson, Esq., were elected auditors unanimously.

Mr. WILSON moved, that the thanks of the meeting be given to the chairman and directors of the company.—Mr. SHERIFF seconded the motion, which was passed unanimously.

Mr. WHITCOMB regretted that, after they had expended 300,000*l.* in 22 years, they had still to draw on the proprietors to the extent of 2000*l.* for their expenses.

Mr. ROUGEMONT (a director) hoped their abandonment of their present system would put an end to that. If Mr. Whitcomb could suggest anything to the board that would improve the state of things, they would be most happy to listen to his suggestions. He admitted the present system was bad, but it could not be altered till 1850. It would not avail them to refer to the past. Their new system, he hoped, would put things to rights, and bring them a good description of tenants. If industrious men of family would only make up their minds to go out to Van Diemen's Land, he had no doubt of their making a respectable living. They would not go there to be neglected, for their excellent chief agent, Mr. Gibson, would take every care of them when in the colony.

Mr. SHERIFF asked, if they would undertake to send them out?

The CHAIRMAN said, they could not be at the expense of sending out poor persons; but to a class above them they would afford every facility. They wanted good steady farmers, with some energy about them, not such as wished to lead featherbed lives. Supposing such persons had from 200*l.* to 200*l.* and wanted an additional 200*l.* to 300*l.* they would not refuse them; moreover,

they would provide such persons with food for 12 months, lend them bullocks, sheep, and implements, for the cultivation of the lands. These he thought very great advantages, especially in a country where the interest for the loan of money varied from 10 to 12 per cent. (Hear, hear.) Besides, they would meet there every kindness from their excellent clergyman, of whom he could not speak in sufficient praise; that gentleman had spent at least 200*l.* of his own money on the lands of the company.—The SECRETARY: And 200*l.* towards the erection of schools. (Hear, hear.)

Mr. MARSH then moved a vote of thanks to the chairman, which was seconded by Mr. WILSON, and passed unanimously.—The CHAIRMAN returned thanks, when the meeting adjourned.

## CLARENCE RAILWAY COMPANY.

A general meeting of shareholders was held on Wednesday, the 31st March.

HENRY BLANSHARD, Esq., in the chair.

After the usual preliminaries, the following report was read:

## REPORT.

The committee of management of the Clarence Railway Company now lay before the proprietors a statement of the company's income and expenditure for the year ending the 31st December, 1846, and the position of the company's affairs on that date. The account, including statement of accounts, shows the gross receipts from the 1st January, 1846, to the 31st December, 1846, to amount to 27,807*l.* 6*s.* 2*d.* and the net profit for the same year, to amount to 17,374*l.* 4*s.* 9*d.* being, as compared with the year 1845, a decrease of 265*l.* 9*s.* 4*d.* Without dwelling upon the fact of there having been no coal traffic shipped at Hartlepool from off the Clarence and Stockton and Hartlepool lines since the 30th of May, 1846, owing to the Stockton and Hartlepool line having been necessarily closed from that date, during the progress of the works at the New West Hartlepool dock, this decrease of revenue may be at once attributed to the nearly unexampled depression in the coal trade during the greater part of the year 1846, and the reduction in the company's dues that it was found expedient to make, consequent upon that depression. It will, however, be satisfactory to the proprietors to know, that the company's revenue is now largely increasing; the income for the months of January, February, and March, in the current year (1847), exceeding in amount the revenue for the corresponding months in any antecedent year. The state of the accompanying accounts for the year 1846, after satisfying all fixed payments, and discharging all current expenses, furnishes a net balance of 353*l.* 14*s.* 5*d.* in addition to which, there remains a reserved fund, from the year 1845 (as per report for that year), of 274*l.* 1*s.* 10*d.* This 631*l.* 16*s.* 3*d.* is applicable for the purpose of distribution as dividend upon the original shares. Your committee recommend, that a dividend of 1*l.* 10*s.* per share on the original shares (as in the year 1845) be now made, which will amount to 450*l.*; thus leaving the remainder of the 631*l.* 16*s.* 3*d.*—viz.: 181*l.* 16*s.* 3*d.*—as an unapplied fund in reserve; this dividend to be payable on and after the 1st day of May next, and that the transfer books be closed for that purpose on the 21st day of April next. Your committee, in the exercise of the general discretion confided to them, have entertained an opinion, that it would be desirable, both for this company and the Leeds and Thirsk Railway Company, that they should be amalgamated; and, in consequence, on the 28th of November last, your committee entered into a preliminary arrangement with the Leeds and Thirsk Company for effecting this object, subject to the approbation of the proprietors, on the following terms, viz.:—That the value of the Clarence Railway shall be taken to be 450,000*l.* That the 4*s.* per cent. Government loan shares, the 6*s.* per cent. first class preferential shares, and the 5*s.* per cent. second class preferential shares, amounting together to 236,000*l.* shall remain permanently preferential in the amalgamated company; and the balance of the 450,000*l.* being 214,000*l.* shall be paid to the Clarence Company, in cash, within seven months if required after the passing of an Act of Parliament for effecting the amalgamation. Your committee believe that, after discharging all claims upon the company, the sum remaining distributable amongst the original shareholders will give about 5*s.* per share. Your committee having caused a Bill in Parliament to be prepared, for legalizing this arrangement, the Bill was submitted to the proprietors at a special general meeting, held for the purpose on the 23d inst., when the same was assented to unanimously; and it was also, at the same meeting, unanimously resolved, that the committee of management of this company be authorized to propose, and this meeting doth assent to, all such alterations, if any, in the said Bill, in its progress through Parliament, as the committee of management may think proper to assent to and adopt, or as may be required by Parliament. The company's books and accounts are open for the inspection of the proprietors, or their agents, at the company's office, in London, where every inquiry will be answered.

A dividend of 30*s.* per share on the original shares, for the past year, was declared, payable after the 1st of May; and thanks having been passed

to the committee of management, for their exertions on behalf of the company, the meeting adjourned.

NEWCASTLE AND CARLISLE RAILWAY.—The annual general meeting was held on Thursday, the 25th ult., at Newcastle.—MATTHEW PLUMMER, Esq., in the chair.—The report stated, that the receipts for the past year amounted to 103,162*l.* being an excess of 15,949*l.* over the receipts of the preceding year. The increase appears to be progressive; for, on a comparison of the traffic returns for the first 11 weeks of the present year with the corresponding weeks of the past year, an increase is shown of 3847*l.* in favour of the present year. It was stated, in reference to past events, that the directors thought it more judicious to borrow money, than to sell the reserved shares at a sacrifice in the market; but when the capabilities of the line began to be developed, they sold them at a considerable premium, for the benefit of the company, the proceeds being applied towards the extinction of the debt incurred by the retention of them. Since last August, shares to the amount of 225,000*l.* have been distributed amongst the shareholders at par, and the instalments, as they fall due, are appropriated to pay off the debentures on which the money was raised. The Alston branch is to be proceeded with immediately; passing through a rich mineral district, it is expected to be very remunerative. Arrangements have been completed with the Lancaster and Carlisle, and the Maryport and Carlisle Railway Company, for a central station at Carlisle; and also with the York and Newcastle, and the Newcastle and Berwick Railway Companies, for a central station at Newcastle. The table of rates and fares has been revised. The dividend declared for the past year is 5*s.* per cent. Negotiations for leaving the Maryport and Carlisle Railway are in progress. The balance, after paying the working expenses and other charges, was 89,064*l.* The sum expended on the works, &c., of the railway during 1846, amounted to 118,391*l.*; and the total, since the commencement, to 1,317,501*l.*—The CHAIRMAN, in reply to some questions, said, there was no intention of creating new shares for the Ashton branch. Their loans were effected at 4*s.* per cent. interest. That part of the premium arising from the sale of shares, had been appropriated to pay their former dividend; while, in the present year, the dividend was paid out of the revenue alone. Resolutions were passed, adopting the report, approving of the dividend for the half-year of 2*l.* 10*s.* on the whole shares, and 1*l.* 9*s.* 9*d.* on the quarter shares, re-electing the retiring directors, and adjourning the meeting to the 26th of April next.

WEST FLANDERS RAILWAY.—The half-yearly meeting of shareholders was held, on Saturday last, at the London Tavern.—W. P. RICHARDS, Esq., in the chair.—The report of the directors stated, that the portion of the line between Bruges and Thourout was opened for passenger traffic on the 6th of Oct. last; a short distance further (to Lichervelde) has since been opened; making, in all, 14 miles now in operation. The severity of the winter has prevented the completion of any more of the line; none of the unfinished works, however, have been injured. The portion from Lichervelde to Ronlers (5*m.* miles) will, it is expected, be completed in a week. The directors confidently expect that the line will be ready for traffic, as far as Courtray (which completes the communication between the State lines), by the end of June. With regard to the works yet to be undertaken, the necessity for a tunnel through the sand-ridge between Menin and Ypres (the only one involving any risk as to the cost of execution) has been obviated. There is no doubt that the works will be completed within the estimate presented to the last half-yearly meeting. The expense of 18 weeks on the portion of the line opened, has confirmed the traffic estimates previously made. There were 5133 passengers between Bruges and Thourout during the 18 weeks ending 27th Feb.; being at the rate of 20,582 per annum. This, too, is at the worst season of the year. The capital account showed a total of receipts (deposit on two calls, and amounts paid in advance on four more) of 254,400*l.*, less 730*l.* of deposits and instalments unpaid. The constructive account showed a total of expenditure of 214,595*l.* 11*s.* which set off against the receipts above-named—6,087*l.* 11*s.* 3*d.* of interest and profits on exchanges; 24,000*l.* of caution money returned by the Belgian Government; 558*l.* 1*s.* 1*d.* received from traffic since 6th Oct.; and 427*l.* 4*s.* 8*d.* of accounts still in course of payment—leaves a balance at bankers' and investment of 73,992*l.* 1*s.* 10*d.*—The CHAIRMAN said, the opening of the line from Bruges to Thourout had given the directors an opportunity of judging of the expense of constructing the whole of the railway. It was a fair average, because the most difficult of the earthwork throughout the entire line was within that distance. The distance was 11*m.* miles; the cost 67,477*l.*, being at the price of 57*s.* per mile. The cost of management could not be ascertained so correctly at present. The traffic could now be calculated within a trifl, by the excellent method of M. Desart, as was the case of that between the towns of Bruges and Thourout. In conclusion, he expressed his opinion that the undertaking would eventually be very profitable, and would, at least, pay double the interest of the State lines.—Mr. CUNIFF (the managing director abroad) gave some further detail as to the progress of the works.—The CHAIRMAN said, the last call would carry them to Courtray.—The report was then adopted unanimously.

Mr. WILSON moved, that the thanks of the meeting be given to the chairman and directors of the company.—Mr. SHERIFF seconded the motion, which was passed unanimously.

Mr. WHITCOMB regretted that, after they had expended 300,000*l.* in 22 years, they had still to draw on the proprietors to the extent of 200*l.* for their expenses.

Mr. ROUGEMONT (a director) hoped their abandonment of their present system would put an end to that. If Mr. Whitcomb could suggest anything to the board that would improve the state of things, they would be most happy to listen to his suggestions. He admitted the present system was bad, but it could not be altered till 1850.

It would not avail them to refer to the past. Their new system, he hoped, would put things to rights, and bring them a good description of tenants.

If industrious men of family would only make up their minds to go out to Van Diemen's Land, he had no doubt of their making a respectable living. They would not go there to be neglected, for their excellent chief agent, Mr. Gibson, would take every care of them when in the colony.

Mr. SHERIFF asked, if they would undertake to send them out?

The CHAIRMAN said, they could not be at the expense of sending out poor persons; but to a class above them they would afford every facility.

They wanted good steady farmers, with some energy about them, not such as wished to lead featherbed lives.

It is certainly worth the experiment; and if found to answer, the result cannot be too quickly nor too extensively circulated. The trains will be, no doubt, by

the above means, with the aid of the breaks, almost instantly stopped. The engine and tender, of course, proceed more rapidly, relieved of their train, and in cases of collision, the damage

height, requiring an enormous power of blast to force through such a heavy mass of materials. I suspect this has arisen from a mistaken notion. In passing through the furnace, the air of the blast becomes charged with carbon; and the gases, thus formed, ignite and show flame when they meet oxygen at the top of the furnace. This flame has been regarded as part of the continuous flame passing through the whole height of the furnace, and is considered a waste of heat—to apply it, the furnace has been raised. Still, there appeared, and the next furnace raised still higher; I should say from 30 ft. to 30 ft. is high enough for any furnace. I consider the grand desideratum now required to be effected, for insuring the regular working of furnaces, is, some means of diffusing more generally and uniformly the gaseous action through the entire mass of materials above the point of fusion. When small streams of air are driven in at different points with great pressure, it seems likely that they will form small channels wherever they meet least resistance, acting there with full effect, but leaving masses at the sides unaffected; and these masses, occasionally slipping down, cause the derangement in the working to which furnaces are so liable. If a system of working furnaces by exhaustion could be rendered practicable, it would be found most advantageous in many respects. The chief difficulty appears to be, in concentrating the heat sufficiently in the heart of the furnace. I am inclined to think that the combination of the blast with exhaustion, and a certain modification of the form of the furnace, would be attended with advantages sufficient to repay the extra expense. By the adoption of such a plan, all the combustible gases produced in the furnace, and now generally wasted, could be used for generating steam, heating the blast, calcining the ore, or other purposes. I am aware that, in many works, these gases are used for heating the blast pipes. Another desideratum in smelting iron is, to render the action of sulphur harmless. This is one of the most general impurities of coal, and its separation is difficult; coking coal does not effect its separation. The union of sulphur and iron as pyrites—the state in which it exists in coal—may be overcome by air and moderate heat, the sulphur then burning, and the iron becoming oxidised; but it resists the action of high heats. The application of air to the upper part of a furnace would not have this effect—the heat would rise too high. The application of steam will be most effective; and I strongly recommend this to the attention of parties commencing to build furnaces for smelting iron. By diffusing steam through the materials in the upper part of the furnace—say, half-way up—sulphur will be disengaged in a harmless state, the reduction of the oxide greatly assisted, the materials kept more open, and the gaseous action rendered more general and uniform.—SCRUTATOR: March 30.

## HYPOTHESES ON IRON.

SIR.—I perceive, in Mr. R. Musket's letter, no reply to my facts. It is a repetition of old assertions, not only without proof, but against it; and these followed by attempts at reasoning on vapours, &c., which defy parallel for contradiction and confusion. The slight of hand by which epithets heretofore applied to ironmasters are shifted to the iron, converting it to a moral agent, guilty of its own "crude, unfinished inferiority," is a new feature. The chimera which Mr. Musket may fight, or praise, just as he pleases, is his own; like the rest of your correspondents, he can neither confer praise, nor blame, in a matter of which he is ignorant.

March 29.

FERREUS.

## BRUNTON'S ORE-DRESSING FRAMES.

SIR.—Allow me, through your valuable Journal, to ask of Mr. Brunton, if his ore-dressing frame has been tried with the improved mode adopted at Wheal Vor, St. Agnes Consols, and other mines, for dressing tin ores, within the last three years; and, if tried, what the saving in the erections, labour, &c.?—ENQUIRER: Redruth, March 29.

## DIRECT-ACTION REVERSING WATER-WHEEL.

SIR.—In reply to the letter of "W. W. B." in your last week's Journal, I beg to inform you, that I do not put forth my reversing water-wheel as a new invention (whether it may be so or not), but as a modification of existing hydraulic machines—my object being, to introduce in the works of the Coombe Valley Quarry, as its acting manager, such machinery as may save the greatest amount of labour, with the least possible cost of construction. The capital of this company is, as every one knows who reads your useful Journal, a very limited one; and it requires great care and perseverance on my part to fulfil the pledge I have made them—viz., that the undertaking shall return a net profit of 20 per cent. on the working capital. The proprietors are mostly builders—persons who have, for a long time, felt the great inconvenience of the present existing monopoly in the slate trade; and who, also, as practical men, well know the theory of cost and produce: it is to those, therefore, that I have submitted the various plans for working their quarry; and the result of which is, I am happy to say, a perfect confidence in my views. I am in hopes of getting the quarry in working order in about six weeks; and, in the mean time, shall be happy to give every information on the subject to any person, whether in this, or any other company, who will call on me at my office. It is my intention of publishing, with your assistance, a series of papers in the *Mining Journal*, from time to time, on slate and the slate trade, illustrated by detail drawings and founded on the experience of some years, in the building, and other constructive departments of my profession.

C. S. RICHARDSON, Surveyor and Civil Engineer.

Whitefriars-street, City.

## MR. GIBBONS ON VENTILATION.

SIR.—In reference to the facts on ventilation in Staffordshire, advanced by "W." and Mr. Gibbons, and which "V." has exposed himself by affecting to disbelieve, I should like the inquiry made, if there be greater facility of ventilation in the thick than in the thin seams. As a given area of a coal, 10 yards in height, must give out five times the quantity of light air afforded by a coal which is only two, it may, perhaps, be owing to this that ventilation, though precarious, can be conducted in Staffordshire with a mere downcast and upcast, devoid of artificial aids. A comparison of the effects in different strata would ascertain the question. I am happy to hear my hasty idea of steam as an auxiliary, has been previously sanctioned by a proposer of Mr. Gurney's experience. I shall take the first opportunity of examining his plans—for "V."s" opinions on them are contradictory; nor does my letter furnish the least indication of any particular way of applying the steam. So far as I can gather from "V."s" paragraph, Mr. Gurney contemplates using steam by pressure, and not by condensation. I am surprised that a person who moves heavy bodies with such ease, should be in any difficulty how hydrogen gas floats down a current of air. It seems this river, which hurls rocks, is unable to support thistle down. That the incline carrying the current back from the extreme rise of the workings may be increased so much, that the ascensive power of the gas shall afford a great obstacle to the other current ascending to the turning point, is obvious, and, if the rise is very steep, will neutralise it; but there is then a simple remedy, which I leave to "V."s" natural ingenuity. In Mr. Gibbons's book, of which I do not believe "V." has read one word, except what he has found in the quotations, the difficulties of this description, in such a colliery as he describes, are specially provided for. The simile offered by "V." on carbonic acid gas, I comprehend, and also its absurdity. If he believes the parallel holds between a mixture of fluids and the eccentricities of a tornado, let him take—atmosphere being 1,000—the specific gravity of a hay-stack, a house, an uprooted tree, a great gun, and a sentinel; if he finds a difficulty, ask the aid of M. Pratique; if both are baffled, let them wend their way—the Valentine and Orion of ventilation—to the Durham College; and, if Nature still refuse "to be asked questions," a little of that study of pneumatics recommended to "F. B." may enable them to identify houses, guns, sentinels, and hay-stacks, with the spherical particles of fluids, pressing equally in every direction. "V." perhaps, is already aware the air we breathe is a mixture of fluids of two specific gravities.

On the 27th of February, I indicated the absurdity, or unfairness, of supposing air, which entered a mine at 80°, would pass through it of the same temperature as if it entered at 40°. Since then, "V." has raised the summer heat to 100°, which is very hot indeed; and "F. B." justly shows that a chimney exposed to that temperature would, instead of containing air at 62°, become a powerful auxiliary. Against this, "V." advances an extraordinary notion, that solid substances absorb less heat than air. Let "V." next summer, while he fans one cheek with a cool zephyr, at the temperature of 100°, apply the other to the brickwork of the chimney heated by the rays of the same sun, and acquaint us if he can face that argument? "V." has put a question respecting gas in "X."s" mine, which he would have avoided had he attentively read that letter. I congratulate "V." on his domestic comforts in keeping the door clear, and providing a channel of ingress and egress through the chimney for himself, his provisions, and friends; but this letter of the alphabet has announced its intention of departing from us. I, at one time, thought "V." was Fluellen him-

self, from the strong evidence by which he identified "W." and Mr. Gibbons, but it was not so; and, at last, "V." has resolved into the initial of a vanishing quantity.—DAVID MUSHET, Jun.: Gloucester, March 30.

## DR. CLANNY'S IMPROVED SAFETY LAMP.

SIR.—Agreeable to promise, I send you as correct a list (as I can obtain from different quarters) of the collieries in which my improved safety lamps have been called into use; I give the names as they stand upon my list, without referring to counties:—Willington, Walker, Wall's End, Sedgill, Gosforth, Coxbridge, Heaton, Patricroft, Monkwearmouth, Thornley, Witton, Belmont, Jarrold, South Penrith, Pelton, Oxclose, Rhymney, Mostyn, Coalbrookdale, Risca, Broadsfield, Newcastle-under-Lyme, South Moor Colliery, Shild Row, Holmside, Crayhead, and Barnhope—in all 27 collieries. One manufacturer of my safety lamps, informed me that he had sent 24 safety lamps to London; and another manufacturer, that he had executed eight dozen of my safety lamps for different parts of the kingdom. I expect ere long from the manufacturers correct information as to the extensive use of my improved safety lamps, to give additional numbers, and of which I promise you as early an account as I can obtain. Sunderland, March 29.

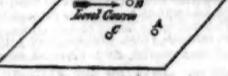
W. REID CLANNY.

## IMPROVEMENTS IN WORKING COLLIERIES.

SIR.—Amongst the many causes deteriorating the air in mines, is smoke—smoke from oil lamps, and smoke from gunpowder; and I am convinced much relief would be given to many mines if the smoke from these two sources could be stopped. I had a lamp put into my hand the other day for burning tallow, which gives very little smoke, instead of oil, and which has done a great deal of good in the collieries about Edinburgh; it is the invention of an intelligent "overman" in the Marquis of Lothian's collieries, near Edinburgh, whose name I do not know. Gun-cotton, which is said to give no smoke, could be substituted for gunpowder—and thus much smoke, which is so hurtful to air, might be got rid of. Could you, or any of your correspondents, inform me where, and at what rate, gun-cotton is to be had?—R. M.: Glasgow, March 30.

## VENTILATION OF COLLIERIES.

SIR.—Although so much has appeared in your valuable columns, under the above head, from "V." "W." "F. B." T. Deakin, &c., &c., I hope I may be allowed to say a few words. I believe yourself, and many of your readers, will agree with me, that if these correspondents would cavil less, and stick more to the subject they would wish to benefit, it would be better. The efficient and safe ventilation of a colliery, however fiery it may be, can be effected by carrying out the following simple plan, which I will endeavour briefly to describe. I will suppose a piece of coal required to be worked—say a mile by three-quarters of a mile—the following rough sketch may render my description more clear:



Let A be the supposed site for the working pit, or shaft; I would have only one pit for winding the coal, not two, as is the general practice, on the most suitable point, near the centre of the piece of coal, but at the very extreme rise. I would sink another shaft B, 1 ft. in diameter, larger than the working shaft A: to the dip of B and A considerably, I would sink another shaft C, of the same dimensions as the shaft A, and so situated in the piece of coal, that when the coal is got around the shaft A, and the hauling becomes expensive, the shaft C may be used as the winding shaft. On the top of shaft B, I would build a chimney 40 ft. high, the same in diameter as the shaft; and at the bottom of shaft B, have a well-constructed furnace always kept at work. Get a well-constructed air-road, not less in area than that the downcast shaft C, carried from this downcast shaft C, through all the workings of the colliery, to the bottom of the upcast shaft B; carry the air in a body, do not split it. Carry the air-roads at the top of the coal, or as near the top of it as practicable, taking care that the air-road is fully in area equal to the downcast shaft C; never let it be throttled, more mischief arises from this than is imagined.

You will see that the working shaft has nothing to do with the ventilation—I condemn this universal practice, in *toto*. If these ill-described plans are carried out—I care not how fiery the colliery—I fearlessly assert, that we shall have no more sad tales of hundreds of our poor colliers being hurried so fearfully to their last account. Many will say that my plan is too expensive—I grant it may be more expensive than most of the slovenly plans adopted, but then it will be effective; and I think all your readers will agree, that no man has a right to work a colliery, who, to save his gold, will knowingly risk the life of his fellow-man. I have not time to write more on this subject now; and, in conclusion, beg the opinion of Mr. Denkin, and other practical miners, upon what I have stated. I claim no originality—nothing new or wonderful—but I beg attention, from those capable of giving an opinion, to what I have, perhaps, imperfectly described.

March 31.

ALPHA.

## THE DRAINAGE OF COAL SEAMS.

SIR.—The remarks of "V." on the disengagement of gas in opening new collieries, recalls the views of Mr. Ryan, who I believe first explained fully the theory of these and other facts in mines. There is no question, had Mr. Ryan been a colliery owner, he would have effected much good; but he had the discouraging task of engraving acute and refined views upon the wild stocks of practised prejudice—a disadvantage which nips the buds of an expansive mind, and blights the quality of its fruit. As confirmatory of his opinions on the effect of faults in detaching the products of fermentation, and enriching the quality of the coal, it is to be remarked that, in the small coal-field of the Forest of Dean, where there are no dykes or dislocations to impede the continuity of the strata, the mines have no inflammable air, which appears entirely drained off, according to his theory, and the coal correspondingly of a poor quality, compared to the products of districts where faults abound.—D. MUSHET, Jun.: Gloucester, March 29.

## VENTILATION OF MINES.

SIR.—In my last letter, I mentioned two facts in the ventilation of my colliery, and in answer to "V."—I depend on fire in the 30 fathom and 15 fm. pits in hot dry weather, as the ventilation will not move without it; but I would call his attention, also "W." of Dudley, and particularly Mr. Gibbons's, to the following extract of a work published by Dr. Ure, in 1839, giving a short description of coal mines; and, speaking of the large collieries at Newcastle, he says:—"Here the circulation is made active, by rarefying the air at the upcast shaft by means of a very large furnace, placed either at the bottom or top of the shaft—the former position is generally preferred; when it surmounts a single pit, or a single division of the pit, the compartment is made air-tight at top, by placing strong bunters or beams across at a suitable distance from the mouth; on these bunters a close scaffolding of plank is laid, well plastered or mortared over with adhesive clay. A little way below the scaffold a passage is previously cut either in a sloping direction, to connect the current of air with the furnace; if any obstacle prevent the scaffold from being erected within the pit, this can be made air-tight at top, and a brick flue carried thence along the surface to the furnace; the furnace has a size proportioned to the magnitude of the ventilation, and the chimneys are either round or square, being from 50 to 100 ft. high, with an inside diameter of from 5 to 9 ft., tapering upwards to a diameter of from 2 1/2 ft. to 5 ft.; such stalks are made 2 in. thick in the body of the building, at bottom they are lined with fire-bricks. The plan of placing the furnace at the bottom of the pit, is, however, more advantageous; because the shaft through which the air ascends to the furnace at the pit mouth, is always at the ordinary temperature—so that, whenever the top furnace is neglected, the circulation of the air becomes languid and dangerous to the workmen; whereas, when the furnace is situated at the bottom of the shaft, its sides get heated, like those of a chimney, through its total length—so that, though the heat of the furnace be accidentally allowed to decline, or become extinct for a little time, the circulation will still go on, the air in the upcast pit being rarefied by the heat remaining in the sides of the shaft." Your readers will also find the air chimney, with furnace either at top or bottom, described in the *Edinburgh Encyclopedia*, published in 1820. As I have stated, Mr. Gibbons is right, in putting on a chimney on the upcast; for every means should be used to make the air take its natural course to there; if the current does so invariably without a chimney, I agree with "V." so far, in thinking it of very little additional service—for without a furnace in the bottom, I very much doubt of its safety alone. From the above extract, Mr. Gibbons must cut a sorry figure before your readers, in making claim to this method of ventilating mines; and your readers will also doubt if Mr. Moss

Taylor is going to be the "intelligent and indefatigable surveyor," to lead us through this Red Sea, as it was his place to have let Mr. G. know what had been done before by others. I regret much that Mr. T. Deakin has not put to the test his way of it—viz.: a fire at the bottom and top of shaft—and given the result; we have not forgot his notable method of purifying the atmosphere, laid before your readers some time ago. I hope Dr. Murray will continue his interesting geological papers—these are worthy of him; but to push forward hurried thoughts or remarks on ventilation, suggested by some imperfect opinion, without the practical trial of it, cannot increase his authority in these matters; to both these gentlemen, I would recommend the adage—"Ego nec studium sine divite rera, nec ruda quid prosi video ingenium."—X.: Carlisle, March 29.

## VENTILATION OF MINES.

SIR.—I have looked on in silence for months past, expecting that some of your talented correspondents, who have all the appearance of being burning and shining lights, would, ere this time, have laid before the coal-owners and the public some tangible scheme of ventilation, or improved method, bearing the stamp of originality, for working our coal mines; but I have hitherto looked in vain. The object of one class of your correspondents seems to be, to labour to establish learned theories, and that of the other class to uproot and destroy them. Thus, between argument and refutation, the writers have apparently lost sight of their philanthropic object; and, while this war of words is going on, carburetted hydrogen gas is mowing down its victims, not by tens, but by fifties.

Being practically acquainted with the working of coal mines, and being anxious to improve the condition of a worthy class of men, I have, for a long time past, made the subject of ventilation, and an improved method of working coal mines, my particular study. By your permission, I will give the results to the public:—

1. I have invented a machine for working coals, by which I can work the hardest coal without the use of gunpowder, and by which I expect to banish every naked light from the mine, by enabling the miner to work with a safety lamp; I also calculate upon saving 15 or 18 out of the 20 per cent, now nearly lost in "small," by the present barbarous mode of "kiving," "nicking," &c., and independent of the advantages to the pitman, I calculate that coal will be worked about 40 per cent. cheaper than at present. By working the coals by this machinery, the operations will be confined to a less area, the ventilating current can be more easily concentrated, and thereby rendered more effective. I have taken preliminary steps towards securing this invention by letters patent; but I wish to obtain the assistance of an influential party, connected with the coal-trade, to enable me to introduce it into the coal mines on a scale commensurate with its merits; and should the notice attract the attention of such a party, I shall be happy to treat with him or them upon equitable terms.

2. Those of your readers who have paid any attention to the cause of explosions in coal mines, which may be scantly gleaned from the evidence given before coroners' juries, and from incidental facts which ooze out occasionally, must at once conclude there is something "rotten" in the system. After attentively reading and weighing everything that has come in my way, bearing on this important subject, for years past, I have, some time since, come to the conclusion, that there is but one course by which the cause can be removed—and that is, to fix and lock every light in the pit, and to allow neither man nor boy to have the least control over them, except a man or men, especially appointed for that purpose. Would the owner of a powder magazine allow a man to enter it with a naked candle, without using some other precaution than merely warning the man as to the insidious nature and destructive power of the powder? You may warn a man of danger, and caution him not to approach it; but the most effectual way to prevent him doing mischief is, to put it out of his power. It is not my intention to occupy your space by going much into detail in the mode of fixing these lights in the mines; but shall gladly afford every information in my power to any owner of collieries, who may apply to me for that purpose. The general principle which I would adopt is, to fix and lock up all the lights in frames, or posts for that purpose, in the horse-roads, &c., so as to give out the greatest amount of light to the best advantage; these lights should be inclosed in lamps or lanterns. A man, or men, should be appointed to have the entire control and management of these lamps or lanterns, and on whom the whole responsibility would rest.

It must be matter of surprise, as well as regret, that, notwithstanding the rapid progress of the arts and sciences during the last half century, the mode of working our coal mines has alone remained nearly stationary; and from what I have seen in old pits' workings, I am inclined to think that the pitmen in the last generation were actually more expert in working coal, than those of the present day, considering the limited resources they possessed in regard to steam-engines, &c. If any one doubted this fact, let him read the account of an accident recorded in your Journal of the 27th inst., which took place at the Yew-Tree Colliery, Kingswinford, where, in the year 1847, seven boys were sent down the pit early in the morning to *BRUSH OUT THE SULPHUR!* Let this be written as with a sunbeam. Need explosions of fire-damp excite surprise after this? Surely, Mr. Editor, this is an unmistakable sign of rottenness in the system. In what light are we to consider the melancholy accident recorded last week, by explosion of fire-damp, in one of Mr. B. Gibbons's pits? It would be too much to say, without a full knowledge of the facts of the case, that that accident is to be considered conclusive evidence against his system, but it certainly has a tendency to throw doubt upon it. We cannot blink the fact, that since the introduction of safety lamps into our coal mines, the loss of life by explosion of fire-damp has been fearfully on the increase—but I am persuaded, that, if a system of fixing up the lights, and locking them from the men, had been adopted 20 years ago, some hundreds of valuable lives might have been saved, and consequent misery and distress prevented, independent of the vast sums of money these accidents cost the colliery owners. Should any of the colliery owners entertain the idea of testing my system of fixing the lights, &c., and still have doubt about the master, I would advise a few of them—say, six or eight—to form themselves into a kind of club, or society, and each man contribute a small sum of money to a general fund, with which to try my system experimentally, by first having only one of their collieries fitted up, in that way; thus, they might, for little expense, put it to a practical test; and, in the event of it turning out well (of which I have no doubt), each owner could have his colliery fitted up in rotation. I have little doubt but several collieries might be fitted with fixed lights, and so placed in comparative safety, for less money than one explosion would cost, not to speak of the loss of life, &c. Now, Mr. Editor, I have not only struck out a new pub, but, I consider, a safe one too; and also an easy and inexpensive method of putting it to a practical test, which I trust some of the colliery owners will show their superior sense in adopting; and should any of them require my assistance in carrying out these plans, I shall do all in my power to meet their wishes.

Bensham, Gateshead, Tyne, March 30.

WILLIAM STOREY.

## MINE SURVEYING—ERRATUM.

SIR.—In my letter, inserted in your Journal of the 27th inst., there is an error, which I should feel obliged by your correcting:—"90 yards" should be "60 yards."—INVESTIGATOR: St. Agnes, near Truro, March 30.

## ELASTIC ATMOSPHERIC TUBES.

SIR.—With reference to the complimentary paragraph in your paper of Saturday last, I beg to say, that I was not unaware of the fact of various methods being tried, to discover a practical resilient tube for railways. My claim, however, is to the brass wires, or rods, as a strengthener for elastic tubes. The double-elastic tube, sent you since the other (noticed in another column), I claim as a new invention. A crudity it may be—but if you will condescend to publish it, something better may come out of it, especially as we are yet but in a transition state, with respect to railway construction. You speak

## CANAL SHARES.

SIR.—Your comparative prices, in Saturday's paper, of canal shares, may be generally accurate, for aught I know—but you have been sadly misled, as to the present price of Somerset Coal Canal, which you quoted at £130. Within these few months, by auction, some fetched only 92d. per share; and, within these 14 days, have been sold at 85d., by private sale.

A PROPRIETOR.

## Proceedings of Public Companies.

## MEETINGS DURING THE ENSUING WEEK.

MONDAY . . . . Great Wheal Martin Mining Company—office, at One. Great Wheal Williams Mining Company—Plymouth, at Twelve. TUESDAY . . . . West Wheal Martin Mining Company—Beafield Hotel, Tavistock, Twelve. Barossa Range Mining Company—office, at Twelve. WEDNESDAY . . . . East Coombe Miners' Company—Forteys Arms Hotel, Barnstaple, Two. English Copper Miners' Company—offices, at Twelve. THURSDAY . . . . Coombe Valley Mining Company—offices, at One. Royal Mail Steam-Packet Company—London Taverns, at One.

[The meetings of Mining Companies are inserted among the Mining Intelligence.]

## VAN DIEMEN'S LAND COMPANY.

The annual meeting of this company was held at the offices, Great Winches ter-street, London, on Tuesday, the 30th March.

JOHN CATTLEY, Esq., in the chair.

MR. HOWELL (the secretary) read the minutes of the former meeting, and the report of the directors, from which we make the following extracts:

## REPORT.

The Government survey of the company's lands has been completed; and the Lieutenant-Governor of Van Diemen's Land is about to forward to the Secretary of State the tracings and descriptions of those lands, with a view to the grant of the requisite warrants by her Majesty's Government; and the directors are now enabled to state, that the said documents have been received, and that Earl Grey has signified the intention of Government to carry out this arrangement fully, in pursuance of the company's charter. Steps have been accordingly taken for preparing and submitting a bill for the sanction of the grant by Parliament; and the directors trust, that an act to empower her Majesty to convey the lands in question to the company, will be obtained in the present session of Parliament. The proprietors will be gratified at learning, that the lands thus awarded to the company, by an agreement between the Lieutenant-Governor of Van Diemen's Land and the company's chief agent, as shown by the tracings and descriptions transmitted to Earl Grey, consist as follows:—viz.: Circular Head, 20,000; Survey Hills, 100,000; Hampshire Hills, 10,000; Middlesex Plains, 10,000; Emu Bay, 50,000; Woolnorth, 100,000; Robbin's Island, 1720; and Trefoil Island, 255—making a total of 366,425 acres. Valuable as these extensive grants must ultimately prove, yet the directors regret to add, that the expectation which they had entertained of their becoming so at a very early period, has been frustrated by Sir Eardley Wilton's announcement to Mr. Gibson, that in consequence of the Government surveyor's unfavourable report of the line of road previously laid down between the settled districts and Emu Bay, the Government gang had been withdrawn to another quarter of the island. The result, however, of an interview with the present Lieutenant-Governor, before his departure from England, leaves the directors to believe, that the project of establishing such a road will long be resumed; and this expectation is fully confirmed by the accounts of the improving state of the commercial, agricultural, and financial interests of the colony; as to the unprecedent depression of those interests, and the consequent want of funds for public works, rather than the difficulties of the line of road, its abandonment may probably be attributable. The proprietors are aware, that the chief inducement held out to settlers to take farms on the company's heavily-timbered lands, was an engagement to take its produce at certain prices. That engagement was entered into just before the commencement of the peculiar embarrassments and stagnation of all enterprise throughout the island, and the results have been very disadvantageous to the company, as the produce delivered into store by their tenants was hardly saleable at any price. The loss, however, has not been so heavy as might have been at first supposed; because, in the earlier years of occupation, the clearance and cultivation of land proceeded but slowly, and the tenants, therefore, instead of being creditors, became largely indebted to the company for indispensable advances of provisions and stores. Those advances at one time reached 20,257, 9s. 5d., and from the time of the latest advices, it would appear that they still exceed 10,000; but the increase in the tenant population, and the rapid clearance of land (amounting altogether to 1640 acres under the plough), leads to the belief, that a great part of this debt will be liquidated in the course of the years 1847 and 1848; so great, in fact, is the progress of cultivation, that the directors would regard with some degree of alarm the prospective success of their tenants, were it not that the improvements in the markets of Australia hold out the expectation of remunerating prices for produce delivered to the company. Should these prices be maintained (as may not reasonably be assumed) for the next three years, there will be no further loss to the company from over production by their tenants, as in March 1846, their leases, and with them all the company's engagements, will terminate. The sales of cattle and sheep have been inconsiderable, and at very low rates, and the horses disposed of were few, and netted small sums; the exact amount cannot be accurately shown, as, from some unaccountable delay, no account sales have yet been received. On the other hand, the sales of live stock for the tenants' subsistence, have been very large. The company's clip of wool for 1845, consisting of 74 bales, realised, at public auction, 1075, 19s. 11d. In the course of the eight months from the 5th of Jan. to the 5th of Sept. last, 20 vessels had arrived, and 31 departed from Circular Head to foreign ports; besides numerous coasters trading between Stanley, Emu Bay, and Launceston; and that the traffic was progressively improving. Whilst provision has thus been made to advance the commercial interests of the new societies growing up at Stanley and Emu Bay, every attention has likewise been paid to their moral and religious improvement; and the directors have great pleasure in stating, that as far back as March, 1846, the chaplain (the Rev. Mr. Griggs) had secured the services of a respectable and well qualified schoolmaster, and also a mistress, for the schools at Stanley. A master and mistress had likewise been obtained for schools at Emu Bay, whose buildings for the purpose were in course of erection, at the cost of the tenants; and Mr. Griggs states his sanguine expectation, that both places will shortly possess as many social advantages, and exhibit as fair a social character, as any amount of population in any rural district of England.

The CHAIRMAN said, the directors had endeavoured to state in that report every thing that was likely to interest the proprietors, and all that came within their knowledge, which they had done as candidly and fairly as they could; as that it would leave him but little to say—indeed, the less he said the better, as that was the result of all their deliberations. Their chief agent had now instructions to reduce, as far as possible, the working expenses of this establishment, and so to alter the terms of tenancy, that the company might ultimately become landlords, and not farmers. (Hear, hear.) He might, on the whole, say that their people were increasing, and, as far as could be expected, the cultivation was increasing. Their tenants were all poor men at the beginning, but by industry, had become prosperous; and it was gratifying to him and the directors to be able to state, that any well-conducted man going to their establishment, would have the power of doing well for himself and family—so much so, that they hardly knew of an instance of a man not succeeding. Those who had succeeded had done so to a far greater extent than they could have done in this densely-peopled country. There was nothing else that he knew of, but he should be happy to answer any question in his power; and with these observations, he would move that the report now read be adopted, priviledged, and circulated amongst the proprietors.

A PROPRIETOR asked, if the tenants had increased.

The SECRETARY said, the population had increased, but there had been no fresh tenants in the year. There had been an increase of 52 labourers.

The CHAIRMAN said, they could not effect an alteration till 1850. He did not consider there would be any great loss this year from their system of taking produce. As to potatoes, they had agreed to take them at 5d. per ton, and Mr. Gibson had been selling them at 5d. 10s.; then to corn, that was taken at 7s. a bushel, and had been selling at 7s. 6d. per bushel.

MR. MARSH observed, that, since 1840, they had taken from them at least 70,000—was that system to be looked upon as finished?

The CHAIRMAN said, they were induced to offer the first 50 tenants the advantage of taking their produce at fixed prices; but experience had now proved the expense and inappropriateness of continuing it any longer. He hoped, by this change, now proposed in the tenancy system, there would be a return for their capital in the shape of rental, or by the sale of their lands, as times improved.

The SECRETARY, at the request of the chairman, read the last resolution, passed at the court of directors on the 18th March, 1847, in respect to the chief agent, Mr. Gibson, giving his attention to the reduction of expenditure, and the change of the system in regard to the tenants.

The CHAIRMAN assured the meeting that this resolution underwent a deal of consideration before it went out, and his only fear was, that they had gone too far, if anything, by this resolution; but Mr. Gibson would feel it his duty to see it enforced, and he hoped the consequence would be, that they would get a small dividend. (Hear, hear.)

The following gentlemen were elected directors of the company—namely: W. R. Browne, Capo Cari, Thomas Harrison, Robert Helme, John Pearce, G. Rougeman, F. F. Rougeman, T. W. Cattley, and J. G. Cattley, Esq., and James Barber, C. R. Lucas, and W. Wilkinson, Esq., were elected auditors unanimously.

MR. WILKINSON moved, that the thanks of the meeting be given to the chairman and directors of the company.—MR. SHERPERD seconded the motion, which was passed unanimously.

MR. WHITCOMB regretted that, after they had expended 200,000l. in 22 years, they had still to draw on the proprietors to the extent of 2000l. for their expenses.

MR. ROUGEMAN (director) hoped their abandonment of their present system would put an end to that. If Mr. Whitcomb could suggest anything to the board that would improve the state of things, they would be most happy to listen to his suggestions. He admitted the present system was bad, but it could not be altered till 1850. It would not avail them to refer to the past. Their new system, he hoped, would put things to rights, and bring them a good description of tenants. If industrious men of family would only make up their minds to go out to Van Diemen's Land, he had no doubt of their making a respectable living. They would not go there to be neglected, for their excellent chief agent, Mr. Gibson, would take every care of them when in the colony.

MR. SHERPERD asked, if they would undertake to send them out poor persons; but to a class above them they would afford every facility. They wanted good steady farmers, with some energy about them, not such as wished to lead featherbed lives. Supposing such persons had from 200l. to 300l., and wanted an additional 200l. to 300l., they would not refuse them; moreover,

they would provide such persons with food for 12 months, lend them bullocks, sheep, and implements, for the cultivation of the lands. These he thought very great advantages, especially in a country where the interest for the loan of money varied from 10 to 12 per cent. (Hear, hear.) Besides, they would meet there every kindness from their excellent clergyman, of whom he could not speak in sufficient praise; that gentleman had spent at least 2000l. of his own money on the lands of the company.—THE SECRETARY: And 200l. towards the erection of schools. (Hear, hear.)

MR. MARSH then moved a vote of thanks to the chairman, which was seconded by Mr. WILSON, and passed unanimously.—THE CHAIRMAN returned thanks, when the meeting adjourned.

## CLARENCE RAILWAY COMPANY.

A general meeting of shareholders was held on Wednesday, the 31st March.

HENRY BLANTHARD, Esq., in the chair.

After the usual preliminaries, the following report was read:

## REPORT.

The committee of management of the Clarence Railway Company now lay before the proprietors a statement of the company's income and expenditure for the year ending 31st December, 1846, and the position of the company's affairs to that date. The accompanying statement of accounts, shows the gross amount of the company at the 1st January, 1846, to the 31st December, 1846, to amount to 37,207, 6s. 2d., and the net profit for the same year, to amount to 17,374, 4s. 9d.; being, as compared with the year 1845, a decrease of 2655, 9s. 4d. Without dwelling upon the fact of there having been no coal whatever shipped at Hartlepool from off the Clarence and Hartlepool and Hartlepool lines since the 29th of May, 1846, owing to the Stockton and Hartlepool line having been necessarily closed from that date, during the progress of the works at the New West Hartlepool dock, this decrease of revenue may be at once attributed to the nearly unexampled depression in the coal trade during the greater part of the year 1846, and the reduction in the company's dues that it was found expedient to make, consequent upon that depression. It will, however, be satisfactory to the proprietors to know, that the company's revenue is now largely increasing; the income for the months of January, February, and March, in the current year (1847), exceeding in amount the revenue for the corresponding months in any antecedent year. The state of the accompanying accounts for the year 1846, after satisfying all fixed payments, and discharging all current expenses, furnishes a net balance of 3531, 1s. 5d.; in addition to which, there remains a reserved fund, from the year 1845 (as per report for that year), of 2732, 1s. 10d.—6314, 1s. 3d. This 6314, 1s. 3d. is applicable for the purpose of distribution as dividend upon the original shares. Your committee recommend, that a dividend of 17. 10s. per share on the original shares (as in the year 1845) be now made, which will amount to 4500l.; thus leaving the remainder of the 6314, 1s. 3d.—viz.: 1614, 1s. 8d.—as an unapplied fund in reserve; this dividend to be payable on and after the 1st day of May next, and that the transfer books be closed for that purpose on the 21st day of April next.

Your committee, in the exercise of the general discretion confided to them, have entertained an opinion, that it would be desirable, both for this company and the Leeds and Thirsk Railway Company, that they should be amalgamated; and, in consequence, on the 28th of November last, your committee entered into a preliminary arrangement with the Leeds and Thirsk Company for effecting this object, subject to the approbation of the proprietors, on the following terms, viz.:—That the value of the Clarence Railway shall be taken to be 450,000. That the 6 per cent. Government loan shares, the 6 per cent. first class, preferential shares, and the 5 per cent. second class preferential shares, amounting together to 236,000, shall remain permanently preferential in the amalgamated company; and the balance of the 460,000l., being 214,000l., shall be paid to the Clarence Company, in cash, within seven months from the date of the passing of an Act of Parliament for effecting the amalgamation. Your committee believe that, after discharging all claims upon the company, the sum remaining distributable amongst the original shareholders, will give about 55s. per share. Your committee having caused a Bill in Parliament to be introduced, for legalising this arrangement, the bill was submitted to the proprietors at a general meeting, held for that purpose on the 23rd inst., when the 65s. was assented to unanimously; and it was also, at the same meeting, unanimously resolved, that the committee of management of this company be authorised to propose, and this meeting doth assent to, all such alterations, if any, in the said Bill, as its progress through Parliament, as the committee of management may think proper to assent to and adopt, or as may be required by Parliament. The company's books and accounts are open for the inspection of the proprietors, or their agents, at the company's office, in London, where every inquiry will be answered.

A dividend of 30s. per share on the original shares, for the past year, was declared, payable after the 1st of May; and thanks having been passed to the committee of management, for their exertions on behalf of the company, the meeting adjourned.

NEWCASTLE AND CARLISLE RAILWAY.—The annual general meeting was held on Thursday, the 25th ult., at Newcastle, —MATTHEW PLUMMER, Esq., in the chair.—The report stated, that the receipts for the past year amounted to 103,162l., being an excess of 15,949l. over the receipts of the preceding year. The increase appears to be progressing; for, on a comparison of the traffic returns for the first 11 weeks of the present year with the corresponding weeks of the past year, an increase is shown of 3347l. in favour of the present year. It was stated, in reference to past events, that the directors thought it more judicious to borrow money, than to sell the reserved shares at a sacrifice in the market; but when the capabilities of the line began to be developed, they sold them at a considerable premium, for the benefit of the company, the proceeds being applied towards the extinction of the debt incurred by the retention of them. Since last August, shares to the amount of 225,000l. have been distributed amongst the shareholders at par, and the instalments, as they fall due, are appropriated to pay off the debentures on which the money was raised. The Alston branch is to be proceeded with immediately; passing through a rich mineral district, it is expected to be very remunerative. Arrangements have been completed with the Lancaster and Carlisle, and the Maryport and Carlisle Railway Company, for a central station at Carlisle; and also with the York and Newcastle, and the Newcastle and Berwick Railway Companies for a central station at Newcastle. The table of rates and fares has been revised. The dividend declared for the past year is 5s. per cent. Negotiations for leading the Maryport and Carlisle Railway are in progress. The balance after paying the working expenses and other charges, was 39,064l. The sum expended on the works, &c., of the railway during 1846, amounted to 118,891l.; and the total, since the commencement, to 1,317,601l.—THE CHAIRMAN, in reply to some questions, said, there was no intention of creating new shares for the Newcastle and Carlisle Railway; but it was intended to issue some shares for the Ashton branch. Their loans were effected at 4 per cent. interest. That part of the premiums arising from the sale of shares, had been appropriated to pay their former dividend; while, in the present year, the dividend was paid out of the revenue alone.—Resolutions were passed, adopting the report, approving of the dividend for the half-year of 2s. 10s. on the whole shares, and 18s. 9d. on the quarter shares, re-electing the retiring directors, and adjourning the meeting to the 26th of April next.

WEST FLANDERS RAILWAY.—The half-yearly meeting of shareholders was held, on Saturday last, at the London Tavern, —W. P. RICHARDS, Esq., in the chair.—The report of the directors stated, that the portion of the line between Bruges and Thourout was opened for passenger traffic on the 6th of Oct. last; a short distance further (to Lichetervele) has since been opened; making, in all, 14 miles now in operation. The severity of the winter has prevented the completion of any more of the line; none of the unfinished works, however, have been injured. The portion from Lichetervele to Roulers (5½ miles) will, it is expected, be completed in a week. The directors confidently expect that the line will be ready for traffic, as far as Courtray (which completes the communication between the State lines), by the end of June. With regard to the works yet to be undertaken, the necessity for a tunnel through the sand-ridge between Menin and Ypres (the only one involving any risk as to the cost of execution) has been obviated. There is no doubt that the works will be completed within the estimate presented to the last half-yearly meeting. The experience of 13 weeks on the portion of the line opened, has confirmed the traffic estimates previously made. There were 5132 passengers between Bruges and Thourout during the 18 weeks ending 27th Feb.; being at the rate of 20,532 per annum. This, too, is at the worst season of the year. The capital account showed a total of receipts (deposit on two cars, and amounts paid in advance on four more) of 254,400l., less 730l. of deposits and instalments unpaid. The constructive account showed a total of expenditure of 214,595l. 11s., which set off against the receipts above-named—6,087l. 11s. 3d. of interest and profits on exchanges; 24,000l. of caution-money returned by the Belgian Government; 5582. 1s. 1d., receipts from traffic since 6th Oct.; and 4279. 47. 8d. of accounts still in course of payment—leaves a balance at bankers' and investors' of 78,992. 17s. 11d.—THE CHAIRMAN said, the opening of the line from Bruges to Thourout had given the directors an opportunity of judging of the expense of constructing the whole of the railway. It was a fair average, because the most difficult of the earthwork throughout the entire line was within that distance. The distance was 11½ miles; the cost 67,477l., being at the price of 6750. per mile. The cost of management could not be ascertained so correctly as present. The traffic could now be calculated within a trifle, by the excellent method of M. Desart, as was the case of that between the towns of Bruges and Thourout. In conclusion, he expressed his opinion that the undertaking would eventually be very profitable, and would, at least, pay double the interest of the State lines.—MR. CUMBER (the managing director abroad) gave some further detail as to the progress of the works.—THE CHAIRMAN said, the last call would carry them to Courtray.—The report was then adopted unanimously.

MR. WHITCOMB moved, that the thanks of the meeting be given to the chairman and directors of the company.—MR. SHERPERD seconded the motion, which was passed unanimously.

MR. WHITCOMB regretted that, after they had expended 200,000l. in 22 years, they had still to draw on the proprietors to the extent of 2000l. for their expenses.

MR. ROUGEMAN (director) hoped their abandonment of their present system would put an end to that. If Mr. Whitcomb could suggest anything to the board that would improve the state of things, they would be most happy to listen to his suggestions. He admitted the present system was bad, but it could not be altered till 1850.

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If industrious men of family would only make up their minds to go out to Van Diemen's Land, he had no doubt of their making a respectable living. They would not go there to be neglected, for their excellent chief agent, Mr. Gibson, would take every care of them when in the colony.

MR. SHERPERD asked, if they would undertake to send them out poor persons; but to a class above them they would afford every facility.

They wanted good steady farmers, with some energy about them, not such as wished to lead featherbed lives. Supposing such persons had from 200l. to 300l., and wanted an additional 200l. to 300l., they would not refuse them; moreover,

the above means, with the aid of the breaks, almost instantly stopped. The engine and tender, of course, proceed more rapidly, relieved of their train, and in cases of collision, the damage to them will be perhaps greater; but not such as to be deemed an objection to the adoption of the proposed means, when the salvation of the carriages will probably more than compensate that extra damage, leaving the preservation of life and limb out of the (pecuniary) calculation. The engineer and stoker might be exposed to more serious injuries; but as they can almost always foresee their danger, they are enabled to provide against it; at all events, it would no doubt render them more cautious in proportion to the greater risk.

## PLANT FOR THE CALEDONIAN RAILWAY.

Last week we had an opportunity of inspecting part of the "plant" that is in preparation at Greenock for the Caledonian Railway (which line, it is expected, will be open for traffic in the course of next year); and, from what we observed, we should say that it is likely to be of the most efficient and improved description. The Greenock Railway, or readers may aware, has now been put into the possession of the Caledonian Railway; and, in consequence, the latter company have been enabled to take immediate possession of the workshops, smithies, and machinery of the former. This acquisition has given them a great advantage; and, with some additions to the buildings formerly in use, permits them at once to commence manufacturing "plant" on their own account, in a town that has long been celebrated for the skill of its mechanics and artizans, as well as for the supply of the materials used in the construction of such implements. The Greenock establishment is under the superintendence of Mr. Sinclair, who has the charge of laying it out according to the present arrangement. It

**CHARCOAL PIG-IRON AND STEEL.**—The Proprietor of MATERIALS for the MANUFACTURE of CHARCOAL PIG-IRON, in this country, and of a process for the CONVERSION of such PIG-IRON INTO STEEL, of a quality equal to that made from the best foreign iron, at an exceedingly low cost, is desirous of meeting with a person willing to FIND the CAPITAL required for such an undertaking, upon conditions which may be learnt on application (from principal only) to "F. H.", No. 301, care of F. D. Lewis and Co., City Advertising and Printing-Office, 3, Castle-street, Cornhill.

**TO BE LET.** the PARK-HILL MINES, DEAN FOREST, GLOUCESTERSHIRE—containing ONE MILLION TONS OF COAL, and ONE MILLION TONS of rich IRON ORE, which, being calcareous, smelts well with argillaceous ironstone, and may be delivered in large quantities to the Staffordshire, Shropshire, and Welsh iron-works, at a price far below the cost of local ironstones. The mines are drainable by level, and can be opened at a trifling expense; and, were blast-furnaces erected, their produce might be smelted on the spot into excellent iron.—Apply (post-paid) to Henry H. Fryer, Esq., solicitor, Coleford, Gloucestershire.

**TO CAPITALISTS.—CARMARTHENSHIRE AND GLAMORGANSHIRE, SOUTH WALES.**—The AGENT of an extensive estate, calls the attention of Ironmasters, Collars, Manufacturers, Farmers, and Capitalists in general, to this announcement—he is prepared to ENTER into ARRANGEMENTS with respectable PARTIES for the LEASING, on long terms, of VARIOUS DESCRIPTIONS of PROPERTY, now the object of public attention.—Anhydrite and Bituminous Coal and Gains, Ironstone, Limestone, Marble, Flax, and other quarries; Fire Clay and Brick Earth, Land for erecting at, and near, a furnishing and manufacturing commercial town, sea-port, and floating dock, manufacturers, shipbuilding yards, wharfs, store and dwelling-houses; and, in the coal and iron districts, SITES for WORKS, joining a railway and canal, leading, by their main trunks and branches, to three seaports—water-power is almost general.—SITUATIONS for RURAL and MARINE RESIDENCES in the most beautiful parts of the country, commanding views of Swansea and Carmarthen Bays, and the Black Mountain, with good roads, cheap markets, and daily communication with Bristol, Gloucester, and the metropolis.

The estate is situated in 24 parishes, offering, in every variety of soil and scenery, numerous objects of interest to the geologist, the sportsman, and the admirer of the Picturesque. As an inducement to capitalists to embark in such agricultural improvements, as draining, planting, erections of proper homesteads, &c., which now so deservedly occupy public attention, LEASES of NINETY-NINE YEARS will be granted for these purposes. Cheap food, labour, fuel, and raw material of every description, will give the manufacturer an advantage over every other part of Great Britain; while the large and still increasing trade in coal affords an intercourse with all parts of the world, for importing the produce of their localities at cheap bulk freights, and for forwarding to their destination the manufactured articles. This more particularly applies to those undertakings where the consumption of coal forms a principal ingredient.

The South Wales Railway will pass through the town, touching the three seaports, and going over a large proportion of the estate on the sea-coast; while the contemplated inland railways will bring the collieries, ironstone, limestone, and stone quarries, within an easy distance of the agricultural counties of Hereford and Worcester, and the great chain of railway communication, connecting Birmingham, Liverpool, Manchester, and all the important manufacturing districts of England.

For further particulars apply to F. L. Brown, solicitor, Llanelli; John Williams, solicitor, 1, Verulam-buildings, Gray's Inn, London; Messrs. Brooks and Green, estate agents, 28, Old Bond-street, London; Mr. John Farram, estate agent, 29, Seaford-street, Liverpool; Alfred Henderson, solicitor, Albion Chambers, Bristol; Messrs. Horrold and Harrison, solicitors, Leeds; and Mr. G. H. Elias, 66, Camden-street, Dublin.

**TO MINE AGENTS, MINE SURVEYORS, &c.—** W. WILTON,

MATHEMATICAL, PHILOSOPHICAL, AND OPTICAL INSTRUMENT MAKER,

ST. DAY, CORNWALL.

Begs to call the attention of MINE AGENTS and SURVEYORS to his MINER'S THEODOLITE, and other IMPROVED INSTRUMENTS, adapted to MINE SURVEYING; and to assure them, that, from many years' constant application of his energies in one of the most active mining districts to the particular branch of mathematical instrument making, he flatters himself he is able to furnish instruments, equal in point of accuracy and workmanship, and superior as regards adaptation to the wants of the miner, to those supplied by almost any other house.

\* \* \* A descriptive price list sent free per post, on application.

**STEAM TO INDIA, VIA EGYPT, MALTA, ITALY, ALEXANDRIA, AND THE PENINSULAR PORTS.**

PASSAGE TO BOMBAY, MADRAS, AND CALCUTTA.

The Peninsular and Oriental Steam Navigation Company BOOK PASSENGERS for CALCUTTA, MADRAS, and CALCUTTA direct, by steamers leaving Southampton on the 20th, and for Alexandria, en route to Bombay, on the 1st of every month.

A steamer from Southampton leaves the 1st and 20th of every month for Malta, whence are steamers to Naples, Genoa, Civita Vecchia, three times a month.

STEAM TO CORUNNA, OPORTO, VIGO, LISBON, CADIZ, AND GIBRALTAR.

A steamer leaves Southampton on the 7th, 17th, and 27th of every month.

Apply at the Peninsular and Oriental Steam Navigation Company's offices, 51, St. Mary Axe, London, where only passages can be secured throughout.

Price Two Shillings and Sixpence.

**THE PRESENT STATE AND FUTURE PROSPECTS OF THE MONMOUTHSHIRE CANAL COMPANY CONSIDERED:**

In a LETTER, addressed to the Committee of Management.

BY JAMES BROWN.

Published for the author, by JOHN WEALE, Architectural Library, 59, High Holborn; sold also by Joseph Grout (opposite King's Head Hotel), Newport, Monmouthshire.

**IMPORTANT TO ENGINEERS, MANUFACTURERS, RAILWAY AND STEAM-BOAT COMPANIES.**

MESSRS. W. & C. MATHER beg to call the attention of the ABOVE PARTIES to their IMPROVED PATENT ELASTIC METALLIC PISTONS.

The PRINCIPAL FEATURE and ADVANTAGE of THIS IMPROVEMENT is 1. Its great ELASTICITY and SELF-ADJUSTING PROPERTIES, which enable it to yield to any inaccuracy of the cylinder, whether oval or taper, and to move with the least possible friction.

2. Its extreme SIMPLICITY and LIGHTNESS, consisting of only two pieces of metal, having the vertical and lateral pressure in due and proper proportion, independent of each other.

3. It takes the LEAST possible SPACE, and is well adapted for air and water-pumps, as it allows of a larger water way.

MESSRS. W. & C. MATHER feel confident that it is the BEST ELASTIC METALLIC PACKING yet known, for the above reasons.

Models may be seen at the Salford Iron-Works, Manchester; at W. Barker's, engineer, Newton-Moor; and also at J. Mather's, engineer, Beaumont-street, Chelsea, London.

**TO ENGINEERS AND BOILER-MAKERS.**

**LAP-WELDED IRON TUBES FOR STEAM-BOILERS.**

THE BIRMINGHAM PATENT IRON TUBE COMPANY, 42, CAMBRIDGE-STREET, BIRMINGHAM, & SMETHWICK, STAFFORDSHIRE, MANUFACTURE TUBES under an exclusive license from Mr. Richard Prosser, the patentee. These tubes are now very extensively used in the boilers of marine and locomotive steam-engines in England and on the continent—stronger, lighter, cheaper, and more durable than brass or copper tubes, and warranted not to open in the weld. They may be fixed in the boilers without ferrules, and can be taken out and refixed without additional trouble or expense.—Address, 42, Cambridge-street, Crescent, Birmingham.

LONDON WAREHOUSE,

68, UPPER THAMES-STREET.

**TO ENGINEERS, BOILER-MAKERS, AND OTHERS.—**

LAP-WELDED IRON TUBES, FOR STEAM-BOILERS.

W. H. RICHARDSON, JUN., & CO., DARLINGTON, STAFFORDSHIRE.

MANUFACTURE all DESCRIPTIONS of WELDED WROUGHT-IRON TUBES, for STEAM, GAS, &c., of any required length and diameter, on the new and unequalled principle of Mr. J. Rose's recent invention (patented August, 1846).—Address as above.

**TO ENGINEERS, RAILWAY CONTRACTORS, MINING AGENTS, IRONMASTERS, AND OTHERS REQUIRING FINE GREASE FOR MACHINERY AND AXLES of every description.—JOSEPH PERCIVAL'S IMPROVED ANTI-FRICTION GREASE is—after trials on machinery and axles of every kind where constant friction is kept up—admitted to be the most useful, economical, and best by far of the kind ever offered to the public.**

References to scientific and practical men can be given, and testimonials shown of its great excellence.—Samples forwarded on application at the manufactory, Green-street, Wellington-street, Blackfriars-road, London.

**IMPORTANT TO RAILWAY COMPANIES.**

**PATENT KAMPTULICON COMPANY, 18, CORNHILL.**

This company having completed their new factory, are prepared to supply railway managers and contractors with an elastic material (perfectly non-absorbent) to place between the rails and sleepers, and between the frames and bodies of carriages, to prevent jarring, and consequently, wear and tear. The elastic planking is strongly recommended to be used for the backs and sides of carriages, to prevent splinters when accidents occur.

By order of the board, G. GHEVILLIE, Secretary.

**IMPROVED LIFTING JACKS.**

MANUFACTURED BY

**GALLOWAYS' AND CO., KNOTT MILL,**

**MANCHESTER.**

\* \* \* The attention of parties who employ Lifting Jacks,

is respectfully requested to the superiority of those annexed, over those hitherto in use.



**IRON, HARDWARE, AND METAL TRADES' PENSION SOCIETY**—FOR GRANTING PERMANENT RELIEF TO DESERVING AND NECESSitous MEMBERS OF THOSE TRADES, AND TO THEIR WIDOWS.

PRESIDENT—WILLIAM THOMPSON, Esq., Ald., M.P.

The FOURTH ANNIVERSARY FESTIVAL of the above SOCIETY will be HELD at the London Tavern, Bishopsgate-street, on WEDNESDAY, the 14th of April,

The Right Hon. the LORD MAYOR in the chair,

Supported by the Sheriffs of London and Middlesex, the Right Hon. Lord Wharncliffe, the Right Hon. Lord Dudley, Count Stuart, and other persons of distinction.

The musical arrangements will be under the direction of Mr. Hobbs, of her Majesty's Chapel Royal.

Dinner on the table at Six o'clock precisely.

Tickets, One Guinea each, may be had of the Honorary Secretary, 67, Upper Thames-street; at Mr. H. L. Taylor's, 10, Queen-street, Cheapside; or at the bar of the London Tavern.—AN ELECTION of THREE ADDITIONAL PENSIONERS will take place in the month of MAY next.

THOMAS HAWKINS, Hon. Secretary.

By order, S. P. HARRIS, Secretary.

BRITISH IRON COMPANY (Old Company established 1825).—OFFICES, 23, THREADNEEDLE-STREET, LONDON.

NOTICE is hereby given, that all SHARES in this company, on which NO DEPOSITS or CALLS have been PAID, will, at the expiration of 31 days from the date hereof, be declared to be FORFEITED, unless all sums due in respect of the same, with interest thereon, be paid into the bankers of the company, Messrs. Spooner, Attwood, and Co., on or before the 16th day of April next.

By order, S. P. HARRIS, Secretary.

**BANWEN IRON COMPANY—OFFICES, 23, THREADNEEDLE-STREET, LONDON.**

NOTICE is hereby given, that this COMPANY being about to be DISSOLVED, under the Act 7 and 8 Victoria, cap. 46, all PERSONS INDEBTED to the company are required forthwith to PAY the AMOUNT due from them; and all PERSONS having any CLAIMS on the company are required to SEND in the SAME to me, at the New British Iron Company's offices, South Sea House, London, preparatory to the final liquidation of the company's affairs.

By order of the directors, ROBERT SMITH, Secretary.

**PATENT GALVANISED IRON COMPANY.—The HALF-YEAR GENERAL MEETING** of this company will be HELD at the London Tavern, Bishopsgate-street, on Tuesday, the 13th April next, at Two o'clock precisely, when the report of the directors, and the accounts for the half-year, ending 31st Dec., will be presented. Three of the directors, and one of the auditors, will retire by rotation, but, being eligible, offer themselves for re-election. Any proprietor intending to offer himself as a candidate for the office of a director, must give seven days' previous notice to the secretary, at the office.

This meeting will be MADE SPECIAL and EXTRAORDINARY, for the purpose of altering and extending clause 50 in the Deed of Settlement, and enacting such other laws, rules, or regulations for the company as may be necessary, and of considering the propriety of authorising a call on the new shares of the company.

A SECOND EXTRAORDINARY and SPECIAL MEETING will be HELD, at the same place, on Tuesday, the 20th April, at Two o'clock precisely, for the purpose of confirming, or otherwise, the resolutions that may be passed at the first extraordinary meeting aforesaid.

By order of the board, ROBERT SMITH, Secretary.

**PATENT GALVANISED IRON AND WIRE ROPE WORKS, MILLWALL, POPLAR.**

ANDREW SMITH begs to inform the Mining, Railway, and Shipping interests, that he has obtained a PATENT for an IMPROVED METHOD of GALVANISING IRON, producing a much superior article at a considerable saving in cost—the improved process for galvanising wire rope, adding only £10 per ton instead of £20, under the ordinary processes, and for ship's steering rigging.—Mr. J. S. Tregella, Truro, agent for Cornwall.

3, Mansion House-place, London, March 30, 1847. S. VINCENT, Secretary.

**BIRMINGHAM AND OXFORD JUNCTION RAILWAY.**

SECOND CALL OF FIVE POUNDS PER SHARE.

The directors having passed a resolution, requiring the shareholders to PAY a further CALL of FIVE POUNDS on each share held by them respectively, on the 19th day of April, 1847, Notice is hereby given, that the shareholders are required to PAY such CALL, on the day appointed, to one of the undermentioned bankers; and, in default thereof, they will be charged with interest, at the rate of 5 per cent. per annum from that date, until the said call is actually paid.

The BIRMINGHAM BANKING COMPANY, 3, Birmingham.

Messrs. ATTWOODS, SPOONER, & Co.,

AT THEIR LONDON AGENTS:

Messrs. JONES LOYD & CO., for the Birmingham Banking Company.

Messrs. SPOONER, ATTWOOD, & CO., for Messrs. ATTWOOD & CO., atat

Messrs. MOSS & CO.'s Liverpool, for the Birmingham Banking Company.

A circular will be sent to each shareholder, which must be deposited at the bankers when the call is paid.

By order of the board of directors, JOHN WILLIAM KIRSHAW, Secretary.

34, Bennett's-hill, Birmingham, Feb. 27, 1847.

**CALEDONIAN RAILWAY—LOANS ON DEBENTURES.**

—The CALEDONIAN RAILWAY COMPANY are prepared to RECEIVE TENDERS of LOANS on DEBENTURES, in sums of not less than £500, for three or five years, bearing interest at the rate of 5 per cent. per annum, payable half-yearly, in Edinburgh, Glasgow, London, Liverpool, Manchester, or Bristol.

Tenders to be addressed to this office.—Parties may also communicate personally with

Messrs. Foster and Braithwaite, 68, Old Broad-street, London.

By order of the directors, D. RANKINE, Treasurer.

Caledonian Railway Office, 122, Princes-street, Edinburgh, March 26, 1847.

**WEST FLANDERS RAILWAYS COMPANY.—NOTICE**

OF CALL.—Notice is hereby given, that the directors have made a further CALL of TWO POUNDS per share on each and every share in this undertaking, and that the same is made PAYABLE on the 29th day of March inst. The proprietors are requested to pay the same, on or before the said 29th day of March, to Messrs. Glyn, Halifax, Mills, & Co., bankers, London-street, London.

Interest, at the rate of 5 per cent. per annum, will be charged on all sums remaining unpaid after the said 29th day of March; and if any call remain unpaid after one month from that date, the SHARES will become absolutely forfeited, according to the statutes of the company.—Dated the 5th day of March, 1847.

(Signed) W. P. RICHARDS, President.

WILLIAM JESSE, Secretary.

11, King William-street, Mansion-house.

**PATENT METAL-CORED RAILWAY SLEEPER COMPANY.—NOTICE.**

The applicants for shares in this company are hereby informed, that the Deed of Settlement of this company is now before the Registrar of Joint Stock Companies for approval—that the company will be forthwith completely registered, and applicants will then be apprised of the number of shares allotted to them.

1, Guildhall-street, Birmingham, March 31. C. E. READ, Chairman.

**PNEUMATIC ENGINE AND SAFETY RAILWAY CARRIAGE COMPANY.**

UNDER ROYAL LETTERS PATENT.

Capital £500,000, in 50,000 shares, of £10 each.—Deposit £4 per share.

The first call will not exceed 10s. per share.

The object of this company is to introduce a new system of propulsion, which will supersede the necessity of steam for railways, stationary engines, navigation, and in all other cases where motive-power is required, by the substitution of a new means of power, derived from the atmosphere alone, without the use of flue tubes, stationary engines, or other machinery of any kind.

Prospects, with full details, will be ready in a few days, and may be obtained of Messrs. Wm. Barry and Co., 7, Birch Lane, Cornhill, and Messrs. Lamond and Co., Hall of Commerce, by whom applications for shares will be received in London.